

Amphenol® Heavy Duty Cylindrical Connectors

12-052-9



**MIL-C-22992
Class L, QWLD**

Amphenol

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Amphenol Aerospace is a Certified ISO 9001 Manufacturer

This catalog covers Amphenol® Heavy Duty/ Power Connectors covered by MIL-C-22992.

The first section covers Class L Power Connectors, complete with insert arrangements, accessories and assembly instructions.

The second part covers our QWLD Heavy Duty Connectors. This second part is made up of 3 sections, including QWLD insert arrangements, connector shell styles and accessories.

If more information is needed concerning our Heavy Duty/Power Connectors, please contact:

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This catalog and other product literature from Amphenol Aerospace and Amphenol Industrial Operations can be viewed, saved, and down-loaded from our website: www.amphenol-aerospace.com.

Due to space limitations, metric equivalents of dimensional data in this catalog have not been included. All dimensions given may be converted to the metric system by the standard formula; Dimension (inches) x 25.40 = dimension (millimeters).

Amphenol® Heavy Duty Cylindrical Connectors

MIL-C-22992/Proprietary

- **High Current Capacity**
- **Rugged Construction**
- **Safety**
- **Serviceability**

Amphenol meets the demands for heavy duty connectors by providing three cylindrical connector series, each with unique design characteristics for reliable operation in specific industrial environments.

Class “L” – for the heaviest electrical loads (Pages 2 – 19)

- Current range from 40 to 200 amperes
- Direct current or single/three phase, 60/400 Hertz alternating current
- Automatic grounding for safety
- MIL-C-22992 qualification

QWLD – for most power and control circuits (Pages 21 – 77)

- Military (MIL-C-22992) qualified connectors and industrial equivalents available
- Increased shell size for greater durability than similar standard connectors

QWL – a more compact heavy duty design for industrial power and control applications (Page 78, references Amphenol Catalog 12-053)

These three series share the following common characteristics which are critical to reliable heavy duty connectors:

- Resistance to the operating environment. Refer to environmental data, below.
- Double stub coupling threads for faster connections; no cross threading, easy cleaning.
- Left hand accessory threads to minimize cable twisting, wire breakage, accidental connector disassembly.
- Gaskets or O-rings at appropriate surfaces for perfect weathertight connections.

Amphenol® heavy duty connectors have been exposed to the following environmental conditions, without compromise of mechanical integrity or degradation of electrical performance.



Condition	Configuration	Description	Reference
Thermal Shock	Unmated	Five complete one hour temperature cycles of –55°C to +125°C	MIL-STD-1344, method 1003, test condition A
Moisture Resistance (Cable mounted connectors)	Mated	Ten complete 24 hour cycles of +25°C to +65°C temperature at 90% to 98% humidity	MIL-STD-202, method 106
Durability	Mated	500 complete mating/unmating cycles	MIL-C-22992
Salt Spray (Corrosion)	Unmated	48 hour exposure to atomized 5% saline solution at +35°C	MIL-STD-1344, method 1001
Vibration	Mated	10 to 55 Hz, .06 inch total excursion in 1 minute cycles for 6 hours, 55 to 2000 Hz, 10G peak amplitude sweep	MIL-STD-1344, method 2005
High Impact	Mated	Nine hammer blows from 1, 3 and 5 feet, three each in three axes on mounting panel	MIL-STD-202, method 207
Heat Rise (Class L only)	Mated	Maximum rated DC current for four hours at +25°C in still air	MIL-C-22992
Fluid Immersion	Unmated	20 hours immersion in hydraulic fluid and lubricating oil	MIL-C-22992
Water Immersion	Mated and Unmated	4 hours immersion at 1 atmosphere pressure differential	MIL-C-22992

Amphenol® Heavy Duty Cylindrical Connectors

MIL-C-22992, Class L



The Amphenol® Class L* heavy duty connectors are the largest size cylindricals, highly suitable for industrial or military applications, and designed to meet the demands of heavy power interconnections.

The design features of this connector series provide:

- **Greatest Capacity** - current ranges 40 to 200 amps, conductor sizes 6 to 4/0
- **Safety** - complete protection of personnel and equipment if connectors are inadvertently disconnected under load
- **Foolproof Mating** - design incorporates specific voltage, current, frequency, phase and grounding requirements
- **Standardization** - MIL-C-22992 Class L insert arrangements specify connector/cable combinations for maximum reliability
- **Serviceable Contacts** - contacts are normally crimped to the cable before connector assembly. No insertion tools required. Bushings are available to adapt smaller diameter wires to larger contacts

* Amphenol design is covered by one or more of the following U. S. Patent Numbers: 3,023,396; 3,221,292.

Amphenol® Heavy Duty Cylindrical Connectors

MIL-C-22992, Class L

Class L connectors are available only in the specific configurations prescribed by MIL-C-22992 for either military or industrial applications. This rigid configuration control assures correct interconnection of electrical circuits for maximum safety and reliability. Controlled parameters include:

Connector shell style and contact type - wall mount and cable connecting receptacles are supplied with socket contacts only and always lead from the power source. Plugs (with coupling rings) have pin contacts only and always lead to the equipment end.

Shell size - the direct relationship of shell size to current carrying capability reduces the possibility of inadequate wiring for heavy electrical loads.†

Shell Size	Current Rating (Amperes)	Contact Size
28	40	6
32	60	4
44	100	1/0
52	200	4/0

Keyway position - four positions of the main keyway are used to discriminate between the following power sources:

two wire D.C.
two wire single phase A.C.
three wire single phase A.C.
four wire three phase A.C.

Insert rotation - when carrying alternating current (A.C), different angular rotations of the insert within the connector shell are used to distinguish between 60 Hertz and 400 Hertz circuits.

Other outstanding design features:

Arc quenching design - recessed socket contacts within the insert create an arc suppressing chamber which protects the user when connectors are separated under load.

Programmed coupling sequence - grounding and neutral contacts engage before power contacts.

Waterproof design - a unique combination of grommets and seals provides waterproofing in any condition - mated or unmated, capped or uncapped.

Rugged construction - machined from high strength aluminum. Straight-line attachment of accessories eliminates possibility of cable twisting or misalignment.

Accessories - supplied with all Class L connectors as indicated on the individual connector descriptions. Replacement accessories may be ordered separately. See pages 12 through 15.

† MIL-C-22992 includes shell size 48, rated at 150 amperes. Consult your local Amphenol sales representative or Amphenol, Sidney, NY for availability.

MIL-C-22992, Class L

how to order

Connectors are supplied with removable contacts unassembled and applicable accessories as listed in the individual connector style descriptions, pages 8 through 11. Additional/replacement contacts or accessories may be ordered by their MS designations.

Connectors are ordered by MS designation. To illustrate the ordering procedure, part number MS90555 C32412SY is shown as follows:

PART NUMBER

<u>MS90555</u>	<u>C</u>	<u>32</u>	<u>4</u>	<u>12</u>	<u>S</u>	<u>Y</u>
1	2	3	4	5	6	7

1. MS Number -

MS90555 designates wall mount receptacle (*power source*)

MS90556 designates straight plug

MS90557 designates cable connecting receptacle without coupling ring

MS90558 designates wall mount plug with coupling ring (*equipment end*)

2. Shell Finish - C (conductive) for AC or N (nonconductive) for DC circuits.

Grounding Assemblies: Finish C

Shell Size	Current Rating Amps	Shell Master Key/Keyway Position						
		60Hz & 400Hz						
		1 Phase			3 Phase			
		2 Wire		3 Wire	3 Wire	4 Wire		
		120 VAC	240 VAC	120/240 VAC	450/480 VAC	120/208 VAC	240/416 VAC	277/480 VAC
28	40	4 (120°)	5 (135°)	4 (120°)	---	4 (120°)	5 (135°)	6 (150°)
32	60	4 (120°)	5 (135°)	4 (120°)	---	4 (120°)	5 (135°)	6 (150°)
44	100	4 (120°)	---	4 (120°)	1 (60°)	4 (120°)	5 (135°)	6 (150°)
52	200	---	---	4 (120°)	---	4 (120°)	5 (135°)	6 (150°)

Non-grounding Assemblies: Finish N

Shell Size	Current Rating Amps	Shell Master/Keyway Position
		DC
		2 Wire
		28 VDC
28	40	N (105°)
32	60	N (105°)
44	100	N (105°)
52	200	N (105°)

3. Shell Size - related directly to current carrying capability.

Size 28 - 40 amperes

Size 32 - 60 amperes

Size 44 - 100 amperes

Size 52 - 200 amperes

4. Master Key/Keyway Position - N designates normal position. Positions 1, 4, 5 and 6 of the master key/keyway prevent cross-mating of incompatible voltages. Refer to the adjacent illustration.

5. Insert Arrangement - determined by connector size (current carrying capability) and cable configuration to be accommodated. Refer to pages 5 & 6.

6. Contact Type - P for pin, S for socket. MS90555 and MS90557 are supplied with socket contacts **only**. MS90556 and MS90558 are supplied with pin contacts **only**.

7. Alternate Insert Rotation - used to prevent cross-mating of incompatible frequencies. Absence of a letter in this space indicates normal (0°) position of the insert. Refer to page 7.



Amphenol Federal Vendor Identification
FSCM77820

MIL-C-22992, Class L

contact arrangements

Shell Size 28, 40 amp rating



28-12, 28-13
Three phase AC, 4 wire, grounding

Cable:

28-12	IPCEA, type G, round, four #8 conductors
28-13	CO-04 HDF, (4/6-4/12R) 1090 per MIL-C-3432

Contacts:

Position	Size	Pin M39029/48	Socket M39029/49
A, B, C	6	-317	-329
N, G	6N	-318	-329

Shell Size 32, 60 amp rating



32-04, 32-05
Single phase AC, 2 wire, grounding

Cable:

32-04	IPCEA, type G, round, two #6 conductors
32-05	CO-02 HDF, (2/4-2/8R) 1100 per MIL-C-3432

Contacts:

Position	Size	Pin M39029/48	Socket M39029/49
A	4	-320	-331
N	4N	-321	-331
G1, G2	6N	-318	-329

Shell Size 32, 60 amp rating



32-12, 32-13
Three phase AC, 4 wire, grounding

Cable:

32-12	IPCEA, type G, round, four #6 conductors
32-13	CO-04 HDF, (4/4-4/12R) 1290 per MIL-C-3432

Contacts:

Position	Size	Pin M39029/48	Socket M39029/49
A, B, C	4	-320	-331
N	4N	-321	-331
G	6N	-318	-329

Shell Size 44, 100 amp rating



44-02, 44-03
28 Volts DC, 2 wire

Cable:

44-02	IPCEA, type W, round, two #2 conductors
44-03	CO-02 HDF, (2/1) 1385 per MIL-C-3432

Contacts:

Position	Size	Pin M39029/48	Socket M39029/49
A	1/0-1	-323	-333
N	1/0N-1	-324	-333

MIL-C-22992, Class L

contact arrangements

Shell Size 44, 100 amp rating



44-12, 44-13
Three phase AC, 4 wire, grounding

Cable:

44-12	IPCEA, type G, round, four #2 conductors
44-13	CO-04 HDF, (4/1-4/8R) 1620 per MIL-C-3432

Contacts:

Position	Size	Pin M39029/48	Socket M39029/49
A, B, C	1/0-1	-323	-333
N	1/0N-1	-324	-333
G1, G2, G3, G4	6G	-319	-330

Shell Size 44, 100 amp rating For Navy Ground Support Equipment use only.



44-50, 44-51, 44-52, 44-56
Three phase AC, 3 wire, grounding

44-50	Available in MS90555 & MS90558 only 4 each # 1 conductors
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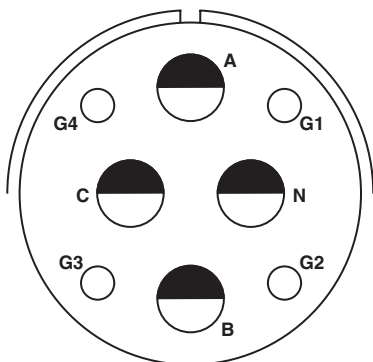
Cable:

44-51	Available in MS90556 & MS90557 only IPCEA, type W, round, four # 1 conductors
44-52	Available in MS90556 only IPCEA, type W, round, four # 2 conductors
44-56	Available in MS90556 only IPCEA, type W, round, four # 6 conductors

Contacts:

Position	Size	Pin M39029/48	Socket M39029/49
A, B, C	1/0-1	-323	-333
G	1/0N-1	-324	-333

Shell Size 52, 200 amp rating



52-12, 52-13
Three phase AC, 4 wire, grounding

Cable:

52-12	IPCEA, type G, round, four #4/0 conductors
52-13	CO-04 HDE, (4/0000-4/4R) 2380 per MIL-C-3432

Contacts:

Position	Size	Pin M39029/48	Socket M39029/49
A, B, C	4/0	-327	-335
N	4/0N	-328	-335
G1, G2, G3, G4	4G	-322	-332

MIL-C-22992, Class L

alternate insert rotations

To avoid cross-plugging problems in applications requiring the use of more than one connector of the same size and arrangement, alternate insert rotations are available as indicated in the accompanying chart.

As shown in the diagram below, the front face of the pin insert is rotated within the shell in a clockwise direction from the normal shell key. The socket insert would be rotated counterclockwise the same number of degrees in respect to the normal shell key.



Insert Arrangements	Keying Position (degrees from normal position)				
	DC or 60 Hz Normal	400 Hz			
		W	X	Y	Z
28-12	0	—	—	180	—
28-13	0	—	—	180	—
32-04	0	—	90	—	—
32-05	0	—	90	—	—
32-12	0	—	—	180	—
32-13	0	—	—	180	—
44-12	0	—	—	—	60
44-13	0	—	—	—	60
44-50	0	—	—	—	—
44-51	0	—	—	—	—
44-52	0	—	—	—	—
44-56	0	—	—	—	—
52-12	0	300	—	—	—
52-13	0	300	—	—	—

MIL-C-22992, Class L

MS90555

wall mount receptacle (*power source*)



All dimensions for reference only.

Shell Size	A Thread Class 2A .1428P-.2857L Double Stub	F* ±.031	G Dia. +.006 -.010	H ±.005	J +.016 -.000	N Dia. +.011 -.020	R (BSC)	S +.021 -.020	T Dia. ±.005
28	2.000	1.376	1.938	1.514	2.188	2.000	1.844	2.375	.177
32	2.250	1.376	2.188	1.514	2.188	2.250	2.062	2.625	.209
44	3.000	1.438	3.062	1.733	2.532	3.125	2.812	3.375	.281
52	3.500	1.438	3.562	1.733	2.532	3.625	3.156	3.875	.281

To complete MS Part number see how to order, pg. 4.
 Protective cover MS90563 is supplied as part of this connector assembly. Refer to page 15 for dimensions.
 *F dimension applies only when rear nut is fully tightened

MIL-C-22992, Class L

MS90556

straight plug



All dimensions for reference only.

Shell Size and Arrangement	A Thread Class 2B .1428P-.2857L Double Stub	C Dia. Max	E Cable Range	K ±.005	L Max Free Length	M Approx. Free Length	N Dia +.011 - .020	Q Dia. Max
28-12	2.000	2.439	1.047-.922	1.557	8.188	7.188	2.000	2.312
28-13			1.130-1.005			7.188		
32-04	2.250	2.689	.969-.844	1.557	8.188	7.188	2.000	2.562
32-05, -12			1.130-1.005			7.188		
32-13			1.342-1.217			8.688		
44-02	3.000	3.667	1.312-1.187	1.776	10.172	10.688	2.500	3.531
44-03			1.438-1.313			9.688		
44-12			1.516-1.391			10.688		
44-13			1.672-1.547			12.688		
44-51	3.000	3.667	1.734-1.609	1.776	10.172	11.688	2.500	3.531
44-52			1.525-1.435			11.188		
44-56			1.135-1.065			7.188		
52-12	3.500	4.167	2.328-2.183	1.776	11.109	17.188	3.250	4.016
52-13			2.453-2.308			18.188		

To complete MS Part number see how to order, pg. 4.
 Protective cover MS90564 is supplied as part of this connector assembly. Refer to page 15 for dimensions.
 Contact brushings MS3348 are supplied as part of connector as required. Refer to page 13 for dimensions.

MIL-C-22992, Class L MS90557

cable connecting receptacle *without coupling ring*



All dimensions for reference only.

Shell Size and Arrangement	A Thread Class 2A .1428P-.2857L Double Stub	B $\pm .005$	C Dia. Max.	E Cable Range	L Max Free Length	M Approx. Free Length	N Dia $+.011$ $-.020$
28-12	2.000	1.514	2.439	1.047-.922	8.156	7.188	2.000
28-13				1.130-1.005		7.188	
32-04	2.250	1.514	2.689	.969-.844	8.156	7.188	2.000
32-05, -12				1.130-1.005		7.188	
32-13				1.342-1.217		8.688	
44-02	3.000	1.733	3.667	1.312-1.187	10.125	10.688	2.500
44-03				1.438-1.313		9.688	
44-12				1.516-1.391		10.688	
44-13				1.672-1.547		12.688	
44-51				1.734-1.609		11.688	
52-12	3.500	1.733	4.167	2.328-2.183	11.062	17.188	3.250
52-13				2.453-2.308		18.188	

To complete MS Part number see how to order, pg. 4.

Protective cover MS90563 is supplied as part of this connector assembly. Refer to page 15 for dimensions.

Contact bushings MS3348 are supplied as part of connector as required. Refer to page 13 for dimensions.

MIL-C-22992, Class L

MS90558

wall mount plug with coupling ring *(equipment end)*



All dimensions for reference only.

Shell Size	A Thread Class 2B .1428P-.2857L Double Stub	J ±.031	G Dia +.006 -.010	F* +.016 -.000	K ±.005	N +.011 -.020	Q Dia. Max	R (BSC)	S +.021 -.020	T Dia. ±.005
28	2.000	.959	1.938	2.639	1.557	2.000	2.312	1.844	2.375	.177
32	2.250	.959	2.188	2.639	1.557	2.250	2.562	2.062	2.625	.209
44	3.000	1.021	3.062	2.998	1.776	3.125	3.531	2.812	3.375	.281
52	3.500	1.021	3.562	2.998	1.776	3.625	4.016	3.156	3.875	.281

To complete MS part number see how to order, pg. 4.
 Protective cover MS90564 is supplied as part of this connector assembly. Refer to page 15 for dimensions.
 * F dimension applies only when rear nut is fully tightened.

MIL-C-22992, Class L Accessories

contacts

**M39029/48
pin contact**



**M39029/49
socket contact**



All dimensions for reference only.

Socket MS Part Number*	Pin MS Part Number	Contact Size	Wire Well Size	A Ref.	B ±.005	C Dia ±.001	D Dia ±.001	G Dia	H Dia	J ±.005	K Ref
M39029/49-335	M39029/48-327	4/0	4/0	3.207	2.097	.641 $\begin{smallmatrix} +.004 \\ -.003 \end{smallmatrix}$	.500	.781 ± .003	.750 $\begin{smallmatrix} +.004 \\ -.003 \end{smallmatrix}$	1.283	2.393
---	M39029/48-328	4/0N	4/0	3.325	2.215	.641 $\begin{smallmatrix} +.004 \\ -.003 \end{smallmatrix}$	.500	.781 ± .003	.750 $\begin{smallmatrix} +.004 \\ -.003 \end{smallmatrix}$	---	---
M39029/49-333	M39029/48-323	1/0	1	3.207	2.097	.406 $\begin{smallmatrix} +.004 \\ -.003 \end{smallmatrix}$	.357	.609 ± .003	.506 $\begin{smallmatrix} +.004 \\ -.003 \end{smallmatrix}$	1.283	2.393
---	M39029/48-324	1/0N	1	3.325	2.215	.406 $\begin{smallmatrix} +.004 \\ -.003 \end{smallmatrix}$	.357	.609 ± .003	.506 $\begin{smallmatrix} +.004 \\ -.003 \end{smallmatrix}$	---	---
M39029/49-331	M39029/48-320	4	4	2.786	1.738	.281 ± .002	.225	.417 ± .002	.374 ± .002	1.158	2.206
---	M39029/48-321	4N	4	2.904	1.856	.281 ± .002	.225	.417 ± .002	.374 ± .002	---	---
M39029/49-329	M39029/48-317	6	6	2.786	1.738	.234 ± .002	.178	.342 ± .002	.312 ± .002	1/158	2.206
---	M39029/48-318	6N	6	2.904	1.856	.234 ± .002	.178	.342 ± .002	.312 ± .002	---	---
M39029/49-332	M39029/48-322	4G	4	2.856	1.746	.281 ± .002	.225	.417 ± .002	.374 ± .002	1.752	2.862
M39029/49-330	M39029/48-319	6G	6	2.856	1.746	.234 ± .002	.178	.342 ± .002	.312 ± .002	1.752	2.862

*Order by MS part number listed for either socket or pin.

MIL-C-22992, Class L Accessories

contact bushing/removal tool

MS3348

contact bushing

All dimensions for reference only.

MS Part Number*	Contact Wire Barrel Size (Ref)	Wire Size (Ref)	A Dia +.010 -.003	B Dia +.002 -.003
MS3348-1 - 2L	1	2	.359	.396
MS3348-4 - 5L	4	5	.250	.272
MS3348-4 - 6L	4	6	.225	.272
MS3348-6 - 8L	6	8	.185	.225
MS3348-6 - 9L	6	9	.155	.225
MS3348-1 - 6L	1	6	.225	.396
MS3348-4 - 8L	4	8	.185	.272
MS3348-6 -10L	6	10	.136	.225
MS3348-4/0-2/0L	4/0	2/0	.500	.629

* Order by MS part number listed.



MS90562

contact removal tool

All dimensions for reference only.

MS Part Number*	Contact Size	A Dia +.000 -.002
MS90562-1	4/0	.790
MS90562-2	2/0	.696
MS90562-3	1/0	.558
MS90562-4	2	.462
MS90562-5	4	.376
MS90562-6	6	.354

* Order by MS part number listed.



MIL-C-22992, Class L Accessories

cable strain relief/cable sealing gland

MS90561 cable strain relief

All dimensions for reference only.

MS Part Number*	Arrange- ment Number	A Dia +.000 -.010	H Dia Cable Range		L Approx.
			Max	Min	
MS90561-2	28-13, 32-12	1.797	1.145	1.003	8.000
MS90561-4	28-02, -04	1.797	.844	.688	7.500
MS90561-12	28-12	1.797	1.047	.891	8.000
MS90561-13	32-13	1.797	1.342	1.185	9.500
MS90561-15	44-12	2.235	1.516	1.360	11.500
MS90561-16	44-13	2.235	1.688	1.531	13.500
MS90561-17	52-12	2.922	2.328	2.039	18.000
MS90561-18	52-13	2.922	2.500	2.211	19.000
MS90561-19	44-51	2.235	1.750	1.550	12.500
MS90561-20	44-52	2.235	1.578	1.375	12.000
MS90561-21	44-56	2.235	1.160	1.010	8.000

* Order by MS part number listed.



MS23747 cable sealing gland

All dimensions for reference only.

MS Part Number*	Arrange- ment Number	A Dia +.000 -.020	B Dia +.020 -.000	C ±.010	Min Cable Dia Ref.
MS23747-2	28-13, 32-05, -12	1.805	1.130	1.034	1.005
MS23747-12	28-12	1.805	1.047	1.034	.922
MS23747-13	32-13	1.805	1.342	1.034	1.217
MS23747-14	44-03	2.242	1.438	1.160	1.313
MS23747-15	44-12	2.242	1.516	1.160	1.391
MS23747-16	44-13	2.242	1.672	1.160	1.547
MS23747-18	52-12	2.927	2.328	1.284	2.183
MS23747-19	52-13	2.927	2.453	1.284	2.308
MS23747-20	44-51	2.242	1.734	1.160	1.609
MS23747-21	44-52	2.242	1.562	1.160	1.437
MS23747-22	44-56	2.242	1.150	1.160	1.025

* Order by MS part number listed.

This gland must be used with MS90561 strain relief.



MIL-C-22992, Class L Accessories

protective covers

MS90563 protective covers used with: MS90555 wall mount receptacle MS90557 cable connecting receptacle

All dimensions for reference only.

MS Part Number*	Use with Shell Size	A Thread Class 2B .1428P-.2857L Double Stub	B Dia Ref		C Approx.
			For MS90555	For MS90557	
MS90563-1()	28	2.000	.177	.177	6.000
MS90563-3()	32	2.250	.209	—	4.500
MS90563-4()	32	2.250	—	.177	6.000
MS90563-7()	44	3.000	.281	.281	7.500
MS90563-11()	52	3.500	.281	.281	7.500

* To complete MS part number, add letter C (Conductive) for AC or N (Non-conductive) for DC connector assemblies.



MS90564 protective covers used with: MS90556 straight plug MS90558 wall mount plug

All dimensions for reference only.

MS Part Number*	Use with Shell Size	A Thread Class 2A (Plated) .1428P-.2857L Double Stub	B Dia Ref		C Approx.	J Max
			For MS90556	For MS90558		
MS90564-1()	28	2.000	.177	.177	7.500	2.266
MS90564-3()	32	2.250	—	.209	6.000	2.266
MS90564-4()	32	2.250	.177	—	7.500	2.266
MS90564-7()	44	3.000	.281	.281	8.500	2.484
MS90564-11()	52	3.500	.281	.281	8.500	2.484

* To complete MS part number, add letter C (Conductive) for AC or N (Non-conductive) for DC connector assemblies.



MIL-C-22992, Class L

installation instructions

Complete installation instructions (L-1014) for Class L connectors are available on request. Reproduced below are condensed assembly instructions to familiarize the user with the installation procedure and tooling required.

Cable Preparation (MS90556 and MS90557 connectors only)
 The following table shows the standard wire color coding, generator terminal markings, and connector contact identification used with Class L connectors.

Standardized Generator Wiring and Connections

Generator Terminal Marking	Current	Contact Designation	Conductor Circuit	Wire Color
+ (POS)	28Vdc	A	Positive	Black
– (NEG) ground	28Vdc	N	Negative	White
L ₁	AC	A	Phase A	Black
L ₂	AC	B	Phase B	Red
L ₃	AC	C	Phase C	Blue (Commercial may be orange)
L ₀	AC	N	Neutral	White
G (or Gnd)	AC	G	Safety grounding	Green (Commercial may be bare)

- Step 1)** Determine cable lay to facilitate alignment of contacts and insert holes without wire crossing.
- Step 2)** Strip cable jacket to dimension shown. Avoid cutting or nicking individual conductor insulation.

Connector Size	D Inches Approx.
28	3.000
32	3.000
44	4.250
52	5.000



Note
 Some insert arrangements require that two or more ground wires be terminated into one contact. Dimension D must therefore be increased to permit routing these wires around the larger conductors.

- Step 3)** Install connector components in the order shown in the applicable assembly view illustrated on pages17 and 18.
- Step 4)** Strip insulation of individual conductors to 3/4 inch from end of conductor.

MIL-C-22992, Class L

installation instructions

MS90555 Connector



Wall Mount Receptacle Components:

1. Shell
2. Insert Assembly, Socket
3. Contact, Socket
4. Grommet Assembly, Socket
5. Nut, Retaining
6. Protective Cap Assembly (Not Shown)
7. Flange Gasket (Not Shown)

MS90556 Connector



Straight Plug Components:

1. Shell and Coupling Nut Assembly
2. Insert Assembly, Pin
3. Contact, Pin
4. Spacer Assembly, Pin
5. Back Adapter
6. Gland Washer
7. Gland
8. Cable Grip
9. Gland Nut
10. Lockwasher (3 each)
11. Screw (3 each)
12. Protective Cap Assembly (Not Shown)

Note: On shell size 32 connectors, item #6 (Gland Washer) is contained within item #5 (Back Adapter).

MIL-C-22992, Class L

installation instructions

MS90557 Connector



Cable Connecting Receptacle Components:

1. Shell
2. Insert Assembly, Socket
3. Contact, Socket
4. Spacer Assembly, Socket
5. Back Adapter
6. Gland Washer
7. Gland
8. Cable Grip
9. Gland Nut
10. Lockwasher (3 each)
11. Screw (3 each)
12. Protective Cap Assembly (Not shown)

Note: On shell size 32 connectors, item #6 (Gland Washer) is contained within item #5 (Back Adapter).

MS90558 Connector



Wall Mount Plug Components:

1. Shell and Coupling Nut Assembly
2. Insert Assembly, Pin
3. Contact, Pin
4. Grommet Assembly, Pin
5. Nut, Retaining
6. Protective Cap Assembly (Not Shown)
7. Flange Gasket (Not Shown)

MIL-C-22992, Class L

installation instructions

Contact Installation

Step 1) Insert stripped conductors in contact wirewells. If contact bushing is used, insert conductor in bushing and bushing in contact wirewell. If two or more ground wires are inserted into a single contact, make sure all wires are fully seated in wirewell.

Step 2) Select correct crimping tool, locator and die combination from the table for contacts to be installed. With conductor or contact bushing in place, insert contact into tool. Close crimping die fully to form a uniform crimp.

Contact Part Number	Size	Type	Crimping Tool*	Locator*	Die*	Removal Tool
M39029/48-327	4/0	P	Pico Model	4297-1	414DA-4/0N-1	MS90562-1
M39029/49-335	4/0	S	400B or			
M39029/48-328	4/0N	P	400B-1			
M39029/48-323	1/0	P	Pico Model	4297-3	414DA-1/0N	MS90562-3
M39029/49-333	1/0	S	400B or			
M39029/48-324	1/0N	P	400B-1			
M39029/48-320	4	P	Pico Model 400B or 400B-1	4297-5	414DA-4N	MS90562-5
M39029/49-331	4	S				
M39029/48-321	4N	P				
M39029/48-322	4G	P				
M39029/49-332	4G	S				
M39029/48-317	6	P	Pico Model 400B or 400B-1	4297-6	414DA-6N	MS90562-6
M39029/49-329	6	S				
M39029/48-318	6N	P				
M39029/48-319	6G	P				
M39029/49-330	6G	S				

* Available from Pico Crimping Tools Co.,
9832 Jersey Ave.
Santa Fe Springs, CA 90670
Phone: 805-388-5510

If crimping tools are available, contacts may be affixed to conductors by soldering. Use rosin-alcohol solder flux, a good grade of 60/40 solder and a 500 watt soldering iron or probe type resistance soldering equipment. Pre-tin conductors before soldering. Solder must not be present on shoulder or retention area of contact.

Connector Assembly

Step 1) If inserts are not already positioned in the connector shell, align large tab on insert with large slot in shell and push insert in until it bottoms in shell.

Step 2) Apply a thin coating of Dow Corning DC-4 lubricant to the periphery of contact holes in spacer or grommet assembly. Push contacts into rear of spacer or grommet assembly until locked into contact retainer bushing.

Step 3) Align contacts with proper holes in insert. Small key of insert must be aligned with appropriate keyway in spacer or grommet assembly. Slide contacts into insert holes until spacer or grommet assembly butts against insert. A thin film of Dow Corning DC-4 lubricant applied to the periphery of insert contact holes will provide maximum sealing efficiency.

Step 4) Assemble accessories to connector. The back adapter "O" ring should have a very thin film of Dow Corning DC-4 lubricant applied. Outer surfaces only of gland should be lubricated with a thin film of UniTemp Grease EP. Avoid getting grease on inside surfaces of gland and on cable jacket.

Step 5) Tighten retaining nut or gland nut on shell or adapter. A metal-to-metal seating condition is desirable, but may not be attainable with maximum cable diameters.

Contact Removal

Step 1) Loosen all rear accessories and slide back along cable.

Step 2) Remove spacer or grommet assembly with contacts from connector insert.

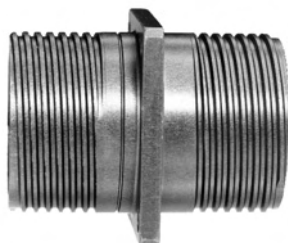
Step 3) Using the appropriate size contact removal tool, push tool over front of contact until it bottoms in spacer or grommet assembly hole. This will open contact retaining bushing and allow contact to be removed from the spacer or grommet assembly from the rear. When using jacketed cable, all contacts should be released from contact retention bushings before removal from spacer or grommet assembly is accomplished.

Amphenol® Heavy Duty Cylindrical Connectors

MIL-C-22992, QWLD



wall mount receptacle



thru bulkhead receptacle



cable connecting plug



straight plug



box mount receptacle



jam nut receptacle
(box mount)



jam nut receptacle
(wall mount)

Amphenol® QWLD Series heavy duty cylindrical connectors provide reliable power and control functions in hostile environments where ordinary connectors cannot survive.

Design features of this connector series provide:

- **High Durability** - water and explosion proof, resistant to abrasion, corrosion, vibration and shock
- **Quick, Positive Mating** - double stub threads per MIL-STD-1373 for fast coupling, easily cleaned
- **Selection** - over 300 industrial and MS-approved insert patterns available, including coaxial and thermocouple

On the drilling platform in the North Sea, pump and motor generator controls run smoothly, although constantly exposed to salt spray.

At Prudhoe Bay where the nights are six months long, portable lighting systems permit operation regardless of temperature plummeting to 50° below zero.

The circus ferris wheel runs continuously despite the fact that it has rained for five days and all power connections are lying in six inches of mud.

These situations are typical of the extreme conditions under which thousands of Amphenol QWLD connectors are operating daily. Outstanding design features that make these cylindricals a necessity for difficult applications include:

- Alumilite 225* hard anodic finish for abrasion and corrosion resistance or conductive cadmium plate
- Resilient inserts for moisture sealing, positive proof against shock and vibration
- Sealing gaskets at every joint for water-proof assembly
- Cable strain relief provided by clamp bar type accessories
- Left hand accessory threads to prevent damage from disconnect torque applied in the wrong direction
- Closed entry socket contact design in solder or replaceable crimp contacts

* Registered trademark of Aluminum Company of America

MIL-C-22992, QWLD

how to order

MS-APPROVED CONNECTORS

To illustrate the ordering procedure, part number MS17343R20N27PW is shown as follows:

PART NUMBER						
<u>MS17343</u>	<u>R</u>	<u>20</u>	<u>N</u>	<u>27</u>	<u>P</u>	<u>W</u>
1	2	3	4	5	6	7

1. MS Number -

- MS17343 designates wall mount receptacle
- MS17344 designates straight plug
- MS17345 designates cable connecting plug
- MS17346 designates box mount receptacle
- MS17347 designates jam nut receptacle with rear accessory threads (wall mount)
- MS17348 designates jam nut receptacle (box mount)

2. Class -

- C designates pressurized - used where circuit integrity is protected by a pressure differential
- R designates environmental - see table, page 1

3. Shell Size -

available in shell sizes 12 through 44. Refer to pages 53 through 59 for dimensional data.

4. Shell Finish -

C for conductive or N for non-conductive

5. Insert Arrangement -

current MS insert arrangements are shown in black in the QWLD insert arrangements section of this catalog. Only these arrangements are available in MS-approved connectors.

6. Contact Type -

P for pin, S for socket

7. Alternate Insert Rotation -

used to prevent cross-mating of connectors. Absence of a letter in this space indicates normal (0°) position of the insert. Refer to page 26 for alternate insert rotation illustrations.

QWLD INDUSTRIAL VERSIONS

These heavy duty connectors are identical to MS-approved types except for the added flexibility of connector shell and contact type and finish options, plus added insert arrangements. To illustrate the ordering procedure, part number 10-194622-14S is shown as follows:

PART NUMBER					
10	-	194	6	22-14	S
<u>1</u>		<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>

1. Base Number Prefix -

used to define connector shell finish and contact type and finish

- 10 - Solder type contacts, silver plated
- 75- Crimp type contacts, silver plated
- 81- Crimp type contacts, plated .0001 gold over silver
- 82- Crimp type contacts for MIL-C-13777 cable, silver plated
- 83- Crimp type contacts for MIL-C-13777 cable, plated .0001 gold over silver
- 85- Crimp type contacts, plated .00005 gold over silver
- All above prefix numbers utilize connector shells with Alumilite* non-conductive finish*
- 88- Solder type contacts, silver plated. Connector shell utilizes olive drab cadmium plate over nickel conductive finish.

2. Base Number -

QWLD Series Heavy Duty Cylindrical Connector

3. Shell Style -

- 0 designates wall mount receptacle
- 1 designates cable connecting plug
- 2 designates box mount receptacle
- 3 designates jam nut receptacle with rear accessory threads (wall mount)
- 4 designates thru bulkhead receptacle
- 6 designates straight plug
- 9 designates jam nut receptacle (box mount)

4. Shell Size/Insert Arrangement -

Amphenol® QWLD connectors are available in equivalent MS shell sizes with all current MS insert arrangements as well as a large selection of special arrangements for power and signal circuits. Select the required insert arrangement number from those shown in black (MS arrangements) or red (industrial arrangements).

5. Contact Type/Alternate Insert Rotation -

P for pin, S for socket. When an alternate position of the connector insert is required to prevent cross-mating of connectors, a different letter (other than P or S) is used. Select from the table below the Amphenol® letter which indicates both type of contact and insert rotation desired. Refer to page 26 for alternate insert rotation illustrations.

Pin Contacts		Socket Contacts	
MS Letters	Amphenol® Letters	MS Letters	Amphenol® Letters
P	P (normal)	S	S (normal)
PW	G	SW	H
PX	I	SX	J
PY	K	SY	L
PZ	M	SZ	N

Alumilite is a registered trademark of Aluminum Co. of America

MIL-C-22992, QWLD

insert arrangements

Insert Arrangement		Service Rating	Total Con- tacts	Contact Size				
MS Approved	Industrial			0	4	8	12	16
12-5		D	1				1	
	12-48	A	3					3
	12-49	A	2					2
14-3		A	1			1		
	14-53	Inst.	6					6
16-2		E	1				1	
16-7		A	3			1		2
16-9		A	4				2	2
16-10		A	3				3	
16-11		A	2				2	
16-12		A	1		1			
16-13		A	2				2	
	16-61	A	7				7	
18-1		B, C, F, G = A; Bal. = Inst.	10					10
	18-3	D	2				2	
18-4		D	4					4
18-5		D	3				2	1
18-6		D	1		1			
18-7		B	1			1		
18-8		A	8				1	7
18-9		Inst.	7				2	5
	18-10	A	4				4	
18-11		A	5				5	
	18-12	A	6					6
18-13		A	4			1	3	
18-14		A	2		1			1
18-15		A	4				4	
18-16		C	1				1	
	18-17	Inst.	7				2	5
	18-19	A	10					10
	18-20	A	5					5
	18-22	D	3					3
	18-24	B, C, F, G = A; Bal. = Inst.	10					10
	18-29	A	5					5
	18-30	A	5					5
	18-31	A	5					5
20-2		D	1	1				
	20-3	D	3				3	
20-4		D	4				4	
	20-6	D	3					3
20-7		A, B, H, G = D; C, D, E, F = A	8					8
20-8		Inst.	6			2		4

Insert Arrangement		Service Rating	Total Con- tacts	Contact Size				
MS Approved	Industrial			0	4	8	12	16
20-9		H = D; Bal. = A	8				1	7
	20-11	Inst.	13					13
	20-12	A	2		1			1
20-14		A	5			2	3	
20-15		A	7				7	
20-16		A	9				2	7
20-17		A	6				5	1
20-18		A	9				3	6
	20-19	A	3			3		
	20-20	A	4		1		3	
20-21		A	9				1	8
20-22		A	6			3		3
	20-23	A	2			2		
20-24		A	4			2		2
	20-25	Inst.	13					13
20-27		A	14					14
20-29		A	17					17
	20-30	Inst.	13					13
20-33		A	11					11
	22-1	D	2			2		
22-2		D	3			3		
	22-4	A	4			2	2	
22-5		D	6				2	4
	22-6	D	3			2		1
22-7		E	1	1				
	22-8	E	2				2	
22-9		E	3				3	
22-10		E	4					4
22-11		B	2					2
22-12		D	5			2		3
	22-13	E = D; A, B, C, D = A	5				4	1
22-14		A	19					19
22-15		D = E; A, B, C, E, F = A	6				5	1
	22-16	A	9				3	6
22-17		A = D; Bal. = A	9				1	8
22-18		A, B, F, G, H = D; C, D, E = A	8					8
22-19		A	14					14
	22-20	A	9					9
22-21		A	3	1				2
22-22		A	4			4		
22-23		H = D; Bal. = A	8				8	
	22-24	C, D, E = D; A, B, F = A	6				2	4

MIL-C-22992, QWLD

insert arrangements

Insert Arrangement		Service Rating	Total Contacts	Contact Size				
MS Approved	Industrial			0	4	8	12	16
22-27		J = D; Bal. = A	9			1		8
	22-28	A	7				7	
	22-33	A, B, C, D = D; E, F, G = A	7					7
	22-34	D	5				3	2
22-36		H = D; Bal. = A	8				8	
24-2		D	7				7	
	24-3	D	7				2	5
	24-5	A	16					16
24-6		A, G, H = D; Bal. = A	8				8	
24-7		A	16				2	14
	24-9	A	2		2			
24-10		A	7			7		
24-11		A	9			3	6	
24-12		A	5		2		3	
24-16		A, B, F, G = D; C, D, E = A	7			1	3	3
	24-17	D	5				2	3
24-20		D	11				2	9
24-21		D	10			1		9
24-22		D	4			4		
24-27		E	7					7
24-28		Inst.	24					24
28-1		A, J, E = D; Bal. = A	9			3	6	
28-2		D	14				2	12
28-3		E	3			3		
28-4		G, P, S = E; Bal. = D	9				2	7
28-5		D	5		2		1	2
	28-6	D	3		3			
	28-7	D	2		2			
28-8		L, M = E; B = D; Bal. = A	12				2	10
28-9		D	12				6	6
28-10		G = D; Bal. = A	7		2	2	3	
28-11		A	22				4	18
28-12		A	26					26
	28-13	A	26					26
28-15		A	35					35
	28-16	A	20					20
28-17		R = B; M, N, P = D; A to L = A	15					15
28-18		M = C; G, H, J, K, L = D; A, B = H; Bal. = Inst.	12					12
28-19		H, M = B; A, B = D; Bal. = A	10				4	6
28-20		A	14				10	4

Insert Arrangement		Service Rating	Total Contacts	Contact Size				
MS Approved	Industrial			0	4	8	12	16
28-21		A	37					37
28-22		D	6		3			3
32-1		A = E; Bal. = D	5	2			3	
32-2		E	5		3			2
32-3		D	9	1	2		2	4
	32-4	F, J, K, N = A; Bal. = D	14				2	12
	32-5	D	2	2				
32-6		A	23		2	3	2	16
32-7		A, B, h, j = Inst.; Bal. = A	35				7	28
	32-8	A	30				6	24
32-9		D	14		2			12
	32-10	A, F = E; G = B; B, E = D; C, D = A	7		2	2		3
	32-12	C, D, E, F, G = A; Bal. = D	15				5	10
32-13		D	23				5	18
32-15		D	8	2			6	
	32-16	A	23		2	3	2	16
32-17		D	4		4			
32-73		A	46					46
	36-1	D	22				4	18
36-3		D	6	3			3	
	36-4	A = D; B, C = A	3	3				
36-5		A	4	4				
36-6		A	6	2	4			
36-7		A	47				7	40
36-8		A	47				1	46
36-9		A	31		1	2	14	14
36-10		A	48					48
	36-11	A	48					48
	36-12	A	48					48
	36-13	N, P, Q = E; Bal. = A	17				2	15
	36-14	D	16			5	5	6
36-15		M = D; Bal. = A	35					35
	36-16	A	47				7	40
	36-17	A	47				7	40
	36-18	A	31		1	2	14	14
	36-20	A	34			2	2	30
36-52		A	52					52
40-1		D	30				6	24
40-9		A	47			1	22	24
40-56		A	85					85
44-52		A	104					104

QWLD

special insert arrangements

Insert Arrange- ment	Service Rating	Total Con- tacts	Contact Size									
			0	4	8	12	16	Coax**				
								0	4	8	12	
16-59	A	4				4						
20-51	A	3			3							
20-57	A	7				7*						
20-58	A	10				5	5					
20-59	A	3			3*							
20-66	A	6				5*	1					
20-79	A/D	8				1	7					
22-63	A	12				4	8					
22-65	A/D	8				8*						
22-70	A	13				8	5					
22-80	A	3			3*							
24-51	A	5			5							
24-52	Hi Volt.	1				1						
24-53	A	5			5							
24-58	A	13			3	3	7					
24-59	A	14				7	7					
24-60	A	7			7*							
24-65	A	15				11	4					
24-66	D	7				7						
24-67	Inst.	19				19						
24-71	A	7			7*							
24-75	A	7			7*							
24-79	A	5			5							
24-80	Inst.	23					23					
24-84	A	19				1						18
28-51	A	12				12						
28-59	A	17				7	10					
28-66	A	16			2	14						
28-72	Coax	3							3			
28-74	A	16			7*		9					
28-75	A	16			7*		9					
28-79	A	16			7		9					
28-82	D	6			2	4						
28-84	A	9			9							
32-52	D	8	2			6						
32-53	Inst./E	42				5	37					
32-56	A	30				6*	24					
32-57	Coax	8				6		2				
32-58	Coax	4							4			
32-60	A	23					15			8		
32-62	Coax	23		2	1	2	16			2		
32-64	Inst.	54					54					
32-68	A	16					12	4				
32-75	Coax	9				2				7		
32-76	A	19				19						
32-79	D	5		4	1							

Insert Arrange- ment	Service Rating	Total Con- tacts	Contact Size									
			0	4	8	12	16	Coax**				
								0	4	8	12	
36-51	D	4	2	2								
36-54	A	39			8		31					
36-55	A	39			8*		31					
36-59	A	53				3*	50					
36-60	A	47				7*	40					
36-64	Coax	4						4				
36-65	Coax	4						4				
36-71	A	53				3	50					
36-73	Coax	7							7			
36-74	A	44					43			1		
36-75	A	48					48*					
36-76	A	47					47					
36-77	D	7		7								
36-78	A	14			12		2					
36-79	A	20				20						
36-80	A	20				20*						
36-83	Coax	7							7			
36-85	A/D	35					35*					
40-53	A	60					60					
40-57	E	4	4									
40-61	A	59			1	3	55					
40-62	A	60					60					
40-63	A	61					61*					
40-64	Coax	36				3	20			13		
40-66	Coax	4						4				
40-67	A	11					1		10			
40-68	A	21			21							
40-70	A	61					61					
40-72	A	11					1		10			
40-73	A	61					61					
40-74	A	6				1		4	1			
40-75	E	5	4			1						
40-80	A	11		10			1					
40-81	A	62					62*					
40-82	A	62					62					
40-85	A	60					60*					
40-86	E	4						4				
40-87	D	7		7								
44-53	A	36					18			18		
48-51†	A	56			10		42	4				
48-52†	A	61					56	5				
48-53†	D	37				37						
48-54†	A	56			10		42	4				
48-55†	A	78		6	2	2	68					
48-57†	A	56	4		10		42					
48-60†	A	56			10		42	4				

* Crimp contacts accommodate wire the same size as the contact as well as wire of the next smaller, even size. Arrangements identified with an asterisk (*) are exceptions. See insert arrangement drawings on pages 39-47 for application wire size.

** Coaxial cable data can be found on insert arrangement drawings, pages 39-47. For further information on coaxial contacts and cable see catalog 12-130.

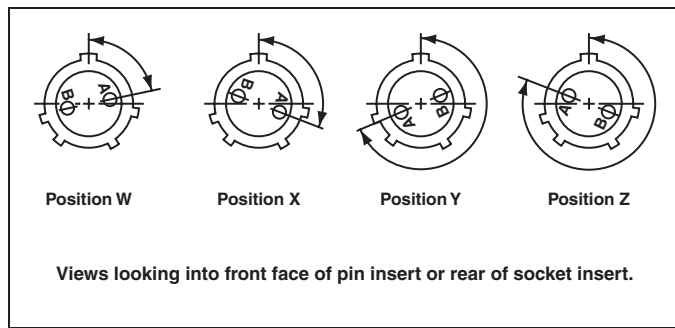
† Consult Sidney, NY for availability.

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alternate insert rotations

To avoid cross-plugging problems in applications requiring the use of more than one connector of the same size and arrangement, alternate insert rotations are available as indicated in the accompanying chart.

As shown in the diagram below, the front face of the pin insert is rotated within the shell in a clockwise direction from the normal shell key. The socket insert would be rotated counterclockwise the same number of degrees in respect to the normal shell key.



The following insert arrangements have the same alternate insert rotations for W, X, Y and Z which are:

Degrees			
W	X	Y	Z
80	110	250	280

16-7	20-14	22-16	24-3	24-21	28-16	32-9
18-5	20-16	22-17	24-4	24-28	28-17	32-10
18-9	20-20	22-18	24-5	28-1	28-19	32-12
18-13	20-22	22-19	24-6	28-4	28-20	32-13
18-14	22-3	22-21	24-7	28-8	28-21	36-1
20-7	22-6	22-24	24-12	28-9	32-1	36-7
20-8	22-12	22-25	24-16	28-10	32-3	36-8
20-9	22-14	22-33	24-17	28-11	32-4	36-13
20-12	22-15	22-34	24-20	28-15	32-6	

Insert Arrangement	Degrees			
	W	X	Y	Z
16-9	35	110	250	325
16-10	90	180	270	—
16-11	35	110	250	325
16-13	35	110	250	325
16-61	80	—	—	280
18-1	70	145	215	290
18-3	35	110	250	325
18-4	35	110	250	325
18-8	70	—	—	290
18-10	—	120	240	—
18-11	—	170	265	—
18-12	80	—	—	280
18-15	—	120	240	—
18-19	—	120	240	—
18-20	90	180	270	—
18-22	70	145	215	290
18-29	90	180	270	—
20-3	70	145	215	290
20-4	45	110	250	—
20-5	35	110	250	325
20-6	70	145	215	290
20-15	80	—	—	280
20-17	90	180	270	—
20-18	35	110	250	325
20-19	90	180	270	—
20-21	35	110	250	325
20-23	35	110	250	325

Insert Arrangement	Degrees			
	W	X	Y	Z
20-24	35	110	250	325
20-27	35	110	250	325
20-29	80	—	—	280
22-1	35	110	250	325
22-2	70	145	215	290
22-4	35	110	250	325
22-5	35	110	250	325
22-8	35	110	250	325
22-9	70	145	215	290
22-10	35	110	250	325
22-11	35	110	250	325
22-13	35	110	250	325
22-20	35	110	250	325
22-22	—	110	250	—
22-23	35	—	250	—
22-27	80	—	250	280
22-28	80	—	—	280
22-36	90	—	270	—
24-2	80	—	—	280
24-9	35	110	250	325
24-10	80	—	—	280
24-11	35	110	250	325
24-22	45	110	250	—
24-27	80	—	—	280
28-2	35	110	250	325
28-3	70	145	215	290
28-5	35	110	250	325

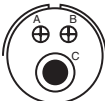
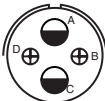
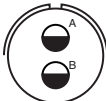
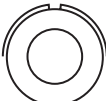
Insert Arrangement	Degrees			
	W	X	Y	Z
28-6	70	145	215	290
28-7	35	110	250	325
28-12	90	180	270	—
28-18	70	145	215	290
28-22	70	145	215	290
32-2	70	145	215	290
32-5	35	110	250	325
32-7	80	125	235	280
32-8	80	125	235	280
32-15	35	110	250	280
32-17	45	110	250	—
32-73	36	—	—	—
36-3	70	145	215	290
36-4	70	145	215	290
36-5	—	120	240	—
36-6	35	110	250	325
36-9	80	125	235	280
36-10	80	125	235	280
36-14	90	180	270	—
36-15	60	125	245	305
36-52	72	144	216	288
40-1	65	130	235	300
40-9	65	125	225	310
40-56	72	144	216	288
44-52	72	135	225	288

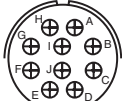
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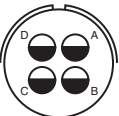
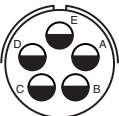
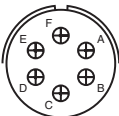
contact arrangements

front face of pin insert or rear of socket insert illustrated

						
Insert Arrangement	12-5	12-48	12-49	14-3	14-53	16-2
Service Rating	D	A	A	A	Inst.	E
Number of Contacts	1	3	2	1	6	1
Contact Size	12	16	16	8	16	12

						
Insert Arrangement	16-7	16-9	16-10	16-11	16-12	16-13
Service Rating	A	A	A	A	A	A
Number of Contacts	1 2	2 2	3	2	1	2*
Contact Size	8 16	12 16	12	12	4	12

						
Insert Arrangement	16-61	18-1	18-3	18-4	18-5	18-6
Service Rating	A	B, C, F, G = A; Bal. = Inst.	D	D	D	D
Number of Contacts	7	10	2	4	2 1	1
Contact Size	16	16	12	16	12 16	4

						
Insert Arrangement	18-7	18-8	18-9	18-10	18-11	18-12
Service Rating	B	A	Inst.	A	A	A
Number of Contacts	1	1 7	2 5	4	5	6
Contact Size	8	12 16	12 16	12	12	16

CONTACT LEGEND

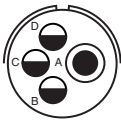
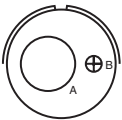
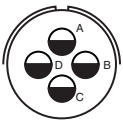
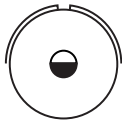
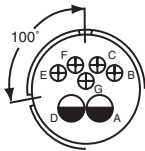
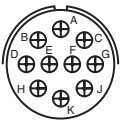
 16
  12
  8
  4
  0

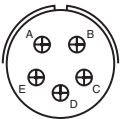
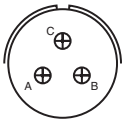
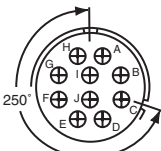
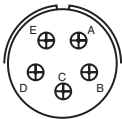
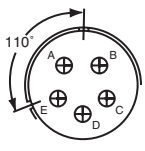
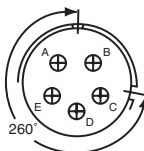
*A = Iron; B = Constantan

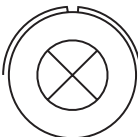
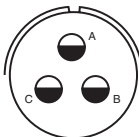
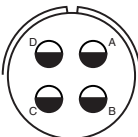
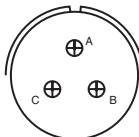
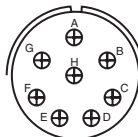
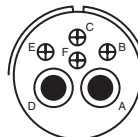
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contact arrangements

front face of pin insert or rear of socket insert illustrated

						
	100° Rotation of 18-9					
Insert Arrangement	18-13	18-14	18-15	18-16	18-17	18-19
Service Rating	A	A	A	C	Inst.	A
Number of Contacts	1 3	1 1	4**	1	2 5	10
Contact Size	8 12	4 16	12	12	12 16	16

						
			250° Rotation of 18-1		110° Rotation of 18-20	260° Rotation of 18-20
Insert Arrangement	18-20	18-22	18-24	18-29	18-30	18-31
Service Rating	A	D	B, C, F, G = A, Bal. = Inst.	A	A	A
Number of Contacts	5	3	10	5	5	5
Contact Size	16	16	16	16	16	16

						
Insert Arrangement	20-2	20-3	20-4	20-6	20-7	20-8
Service Rating	D	D	D	D	A, B, H, G = D; C, D, E, F = A	Inst.
Number of Contacts	1	3	4	3	8	2 4
Contact Size	0	12	12	16	16	8 16

**A, C = Iron; B, D = Constantan

CONTACT LEGEND

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MIL-C-22992, QWLD

contact arrangements

front face of pin insert or rear of socket insert illustrated

Insert Arrangement
Service Rating
Number of Contacts
Contact Size

20-9	20-11	20-12	20-14	20-15	20-16
H = D; Bal. = A	Inst.	A	A	A	A
1 7	13	1 1	2 3	7	2 7
12 16	16	4 16	8 12	12	12 16

Insert Arrangement
Service Rating
Number of Contacts
Contact Size

20-17	20-18	20-19	20-20	20-21	20-22
A	A	A	A	A	A
5 1	3 6	3	1 3	1 8	3 3
12 16	12 16	8	4 12	12 16	8 16

Insert Arrangement
Service Rating
Number of Contacts
Contact Size

20-23	20-24	20-25	20-27	20-29	20-30
A	A	Inst.	A	A	Inst.
2	2 2	13	14	17	13
8	8 16	16	16	16	16

CONTACT LEGEND

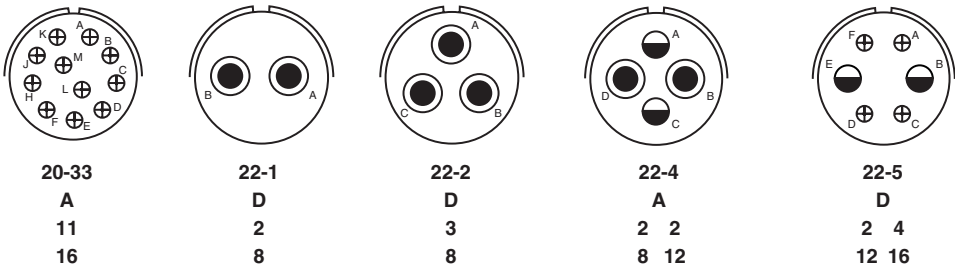
16	12	8	4	0

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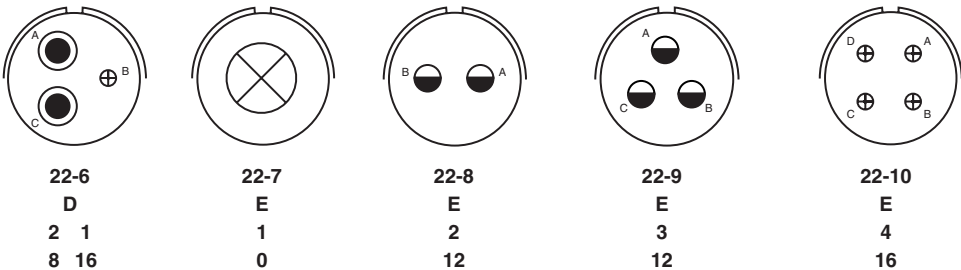
contact arrangements

front face of pin insert or rear of socket insert illustrated

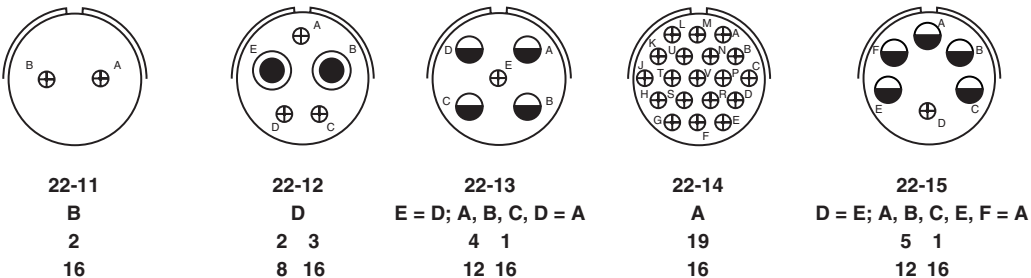
Insert Arrangements
Service Rating
Number of Contacts
Contact Size



Insert Arrangement
Service Rating
Number of Contacts
Contact Size



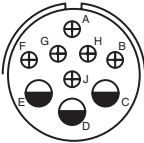
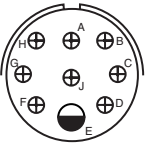
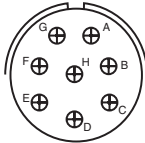
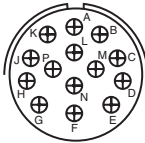
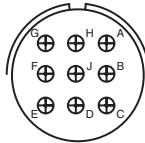
Insert Arrangement
Service Rating
Number of Contacts
Contact Size

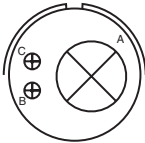
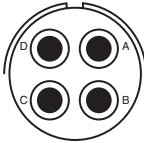
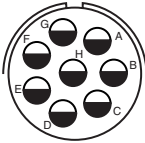
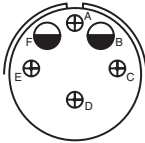
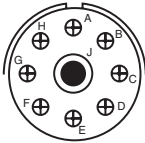


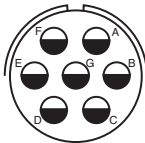
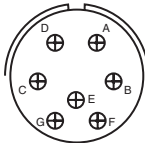
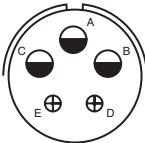
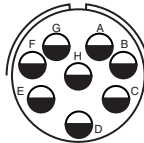
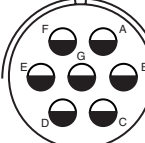
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contact arrangements

front face of pin insert or rear of socket insert illustrated

Insert Arrangement					
Service Rating	22-16 A	22-17 A = D; Bal. = A	22-18 A, B, F, G, H = D; C, D, E = A	22-19 A	22-20 A
Number of Contacts	3 6	1 8	8	14	9
Contact Size	12 16	12 16	16	16	16

Insert Arrangement					
Service Rating	22-21 A	22-22 A	22-23 H = D; Bal. = A	22-24 C, D, E = D; A, B, F = A	22-27 J = D; Bal. = A
Number of Contacts	1 2	4	8	2 4	1 8
Contact Size	0 16	8	12	12 16	8 16

Insert Arrangement					
Service Rating	22-28 A	22-33 A, B, C, D = D; E, F, G = A	22-34 D	22-36 H = D; Bal. = A	24-2 D
Number of Contacts	7	7	3 2	8	7
Contact Size	12	16	12 16	12	12

CONTACT LEGEND

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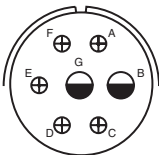
0

MIL-C-22992, QWLD

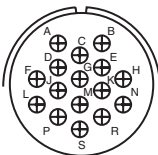
contact arrangements

front face of pin insert or rear of socket insert illustrated

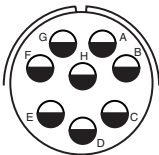
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



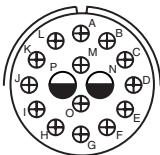
24-3
D
2 5
12 16



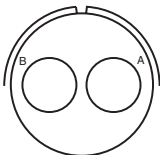
24-5
A
16
16



24-6
A, G, H = D; Bal. = A
8
12

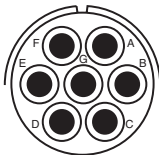


24-7
A
2 14
12 16

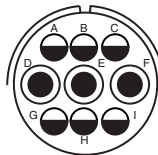


24-9
A
2
4

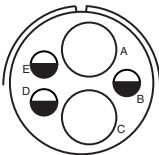
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



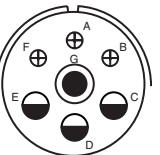
24-10
A
7
8



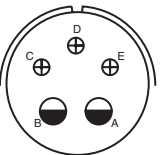
24-11
A
3 6
8 12



24-12
A
2 3
4 12

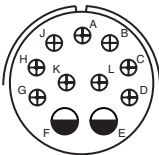


24-16
A, B, F, G = D; C, D, E = A
1 3 3
8 12 16

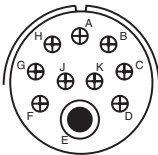


24-17
D
2 3
12 16

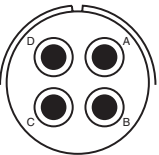
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



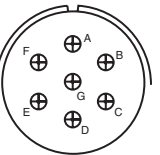
24-20
D
2 9
12 16



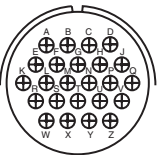
24-21
D
1 9
8 16



24-22
D
4
8

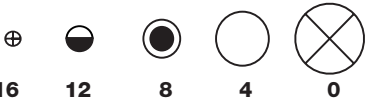


24-27
E
7
16



24-28
Inst.
24
16

CONTACT LEGEND

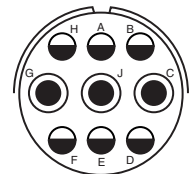


MIL-C-22992, QWLD

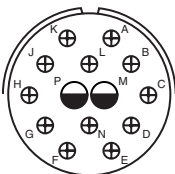
contact arrangements

front face of pin insert or rear of socket insert illustrated

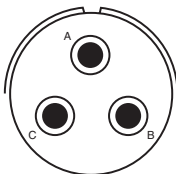
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



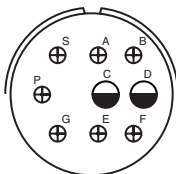
28-1
A, J, E = D; Bal. = A
3 6
8 12



28-2
D
2 12
12 16

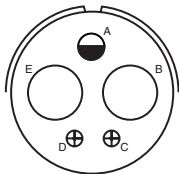


28-3
E
3
8

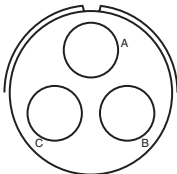


28-4
G, P, S = E; Bal. = D
2 7
12 16

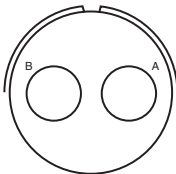
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



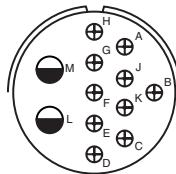
28-5
D
2 1 2
4 12 16



28-6
D
3
4

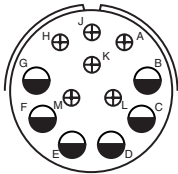


28-7
D
2
4

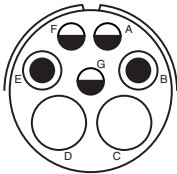


28-8
L, M = E; B = D; Bal. = A
2 10
12 16

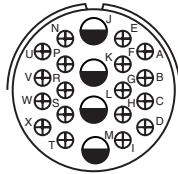
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



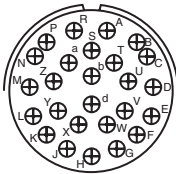
28-9
D
6 6
12 16



28-10
G = D; Bal. = A
2 2 3
4 8 12



28-11
A
4 18
12 16



28-12
A
26
16

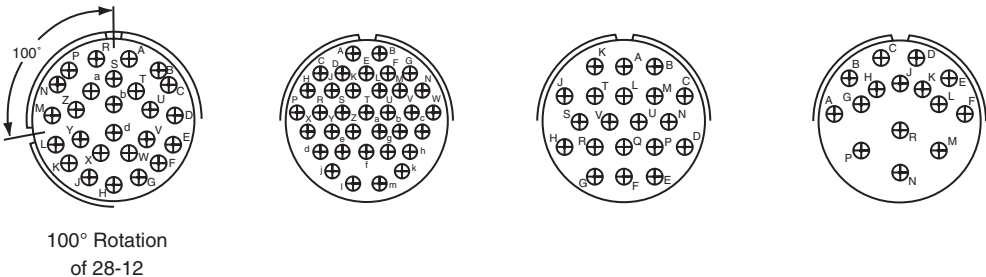
CONTACT LEGEND



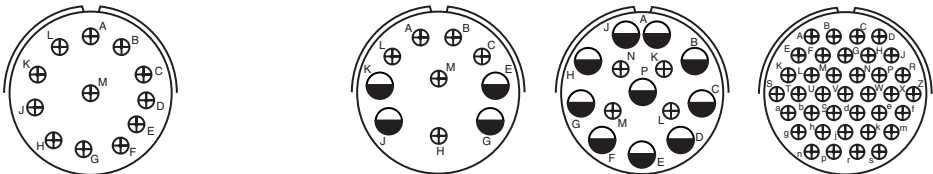
MIL-C-22992, QWLD

contact arrangements

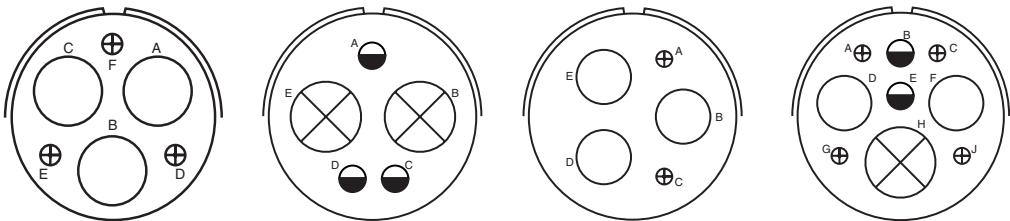
front face of pin insert or rear of socket insert illustrated



Insert Arrangement	28-13	28-15	28-16	28-17
Service Rating	A	A	A	R = B; M, N, P = D; A to L = A
Number of Contacts	26	35	20	15
Contact Size	16	16	16	16



Insert Arrangement	28-18	28-19	28-20	28-21
Service Rating	M = C; G, H, J, K, L = D; A, B = H; Bal. = Inst.	H, M = B; A = D; Bal = A	A	A
Number of Contacts	12	4 6	10 4	37
Contact Size	16	12 16	12 16	16



Insert Arrangement	28-22	32-1	32-2	32-3
Service Rating	D	A = E; Bal. = D	E	D
Number of Contacts	3 3	2 3	3 2	1 2 2 4
Contact Size	4 16	0 12	4 16	0 4 12 16

CONTACT LEGEND

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16

12

8

4

0

MIL-C-22992, QWLD

contact arrangements

front face of pin insert or rear of socket insert illustrated

Insert Arrangement Service Rating Number of Contacts Contact Size				
	32-4	32-5	32-6	32-7
	F, J, K, N = A; Bal. = D	D	A	A, B, h, j = Inst; Bal. = A
	2 12 12 16	2 0	2 3 2 16 4 8 12 16	7 28 12 16
Insert Arrangement Service Rating Number of Contacts Contact Size				
	32-8	32-9	32-10	32-12
	A	D	A, F = E, G = B; B, E = D; C, D = A	C, D, E, F, G = A; Bal. = D
	6 24 12 16	2 12 4 16	2 2 3 4 8 16	5 10 12 16
Insert Arrangement Service Rating Number of Contacts Contact Size				
	32-13	32-15	32-16	32-17
	D	D	A	D
	5 18 12 16	2 6 0 12	2 3 2 16 4 8 12 16	4 4

CONTACT LEGEND

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16

12

8

4

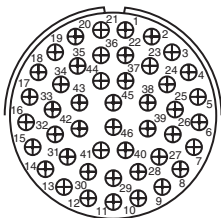
0

MIL-C-22992, QWLD

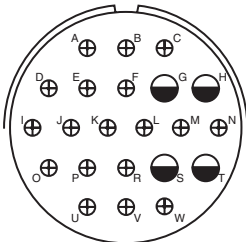
contact arrangements

front face of pin insert or rear of socket insert illustrated

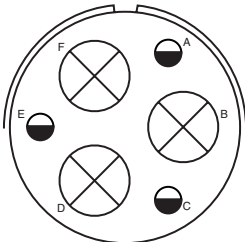
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



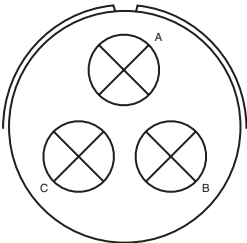
32-73
A
46
16



36-1
D
4 18
12 16

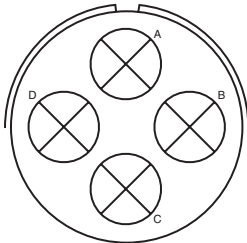


36-3
D
3 3
0 12

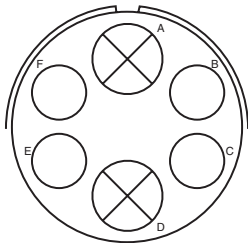


Insert Arrangement
Service Rating
Number of Contacts
Contact Size

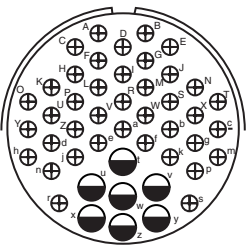
36-4
A = D; B, C = A
3
0



36-5
A
4
0

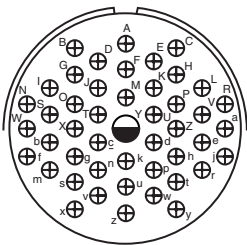


36-6
A
2 4
0 4

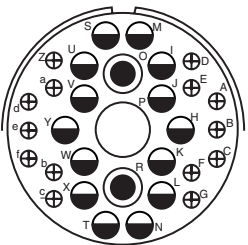


Insert Arrangement
Service Rating
Number of Contacts
Contact Size

36-7
A
7 40
12 16

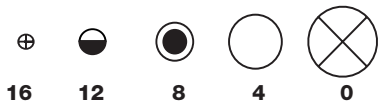


36-8
A
1 46
12 16



36-9
A
1 2 14 14
4 8 12 16

CONTACT LEGEND

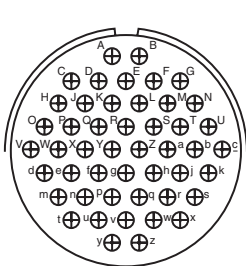


MIL-C-22992, QWLD

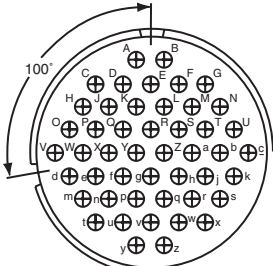
contact arrangements

front face of pin insert or rear of socket insert illustrated

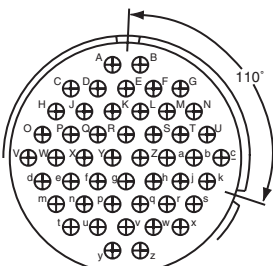
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



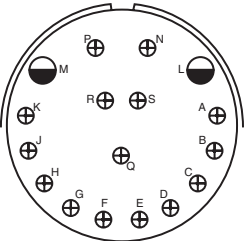
36-10
A
48
16



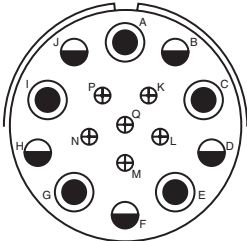
100° Rotation
of 36-10
36-11
A
48
16



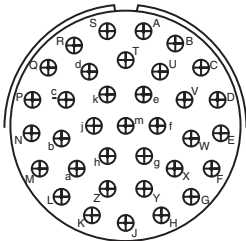
110° Rotation
of 36-10
36-12
A
48
16



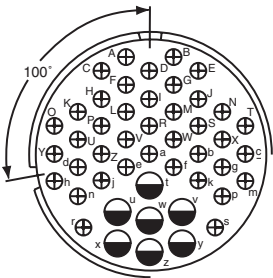
36-13
N, P, Q = E; Bal. = A
2 15
12 16



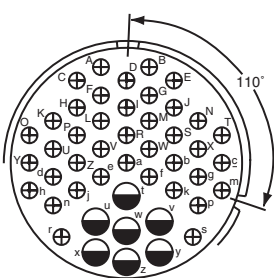
36-14
D
5 5 6
8 12 16



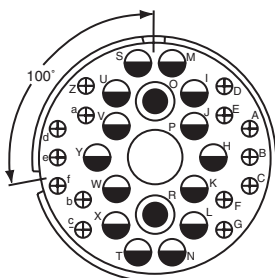
36-15
M = D; Bal. = A
35
16



100° Rotation
of 36-7
36-16
A
7 40
12 16



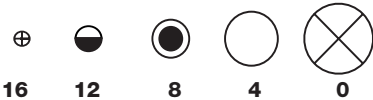
110° Rotation
of 36-7
36-17
A
7 40
12 16



100° Rotation
of 36-9
36-18
A
1 2 14 14
4 8 12 16

Insert Arrangements
Service Rating
Number of COntracts
Contact Size

CONTACT LEGEND

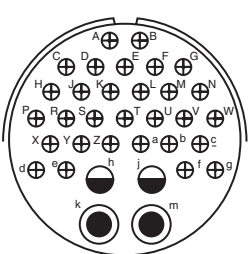


MIL-C-22992, QWLD

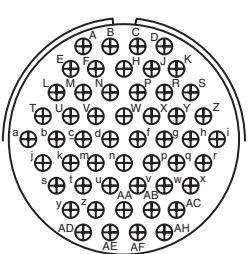
contact arrangements

front face of pin insert or rear of socket insert illustrated

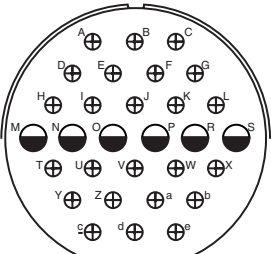
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



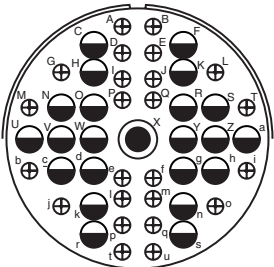
36-20
A
2 2 30
8 12 16



36-52
A
52
16

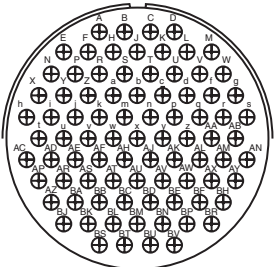


40-1
D
6 24
12 16

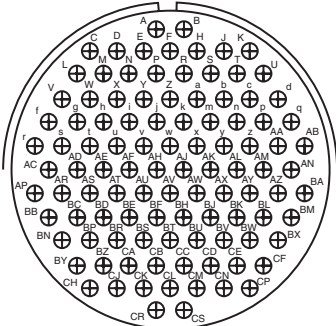


Insert Arrangement
Service Rating
Number of Contacts
Contact Size

40-9
A
1 22 24
8 12 16

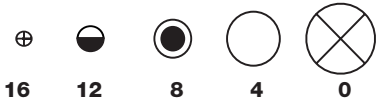


40-56
A
85
16



44-52
A
104
16

CONTACT LEGEND



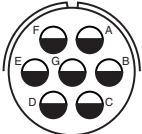
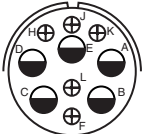
QWLD

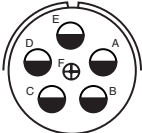
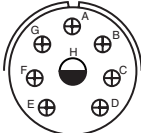
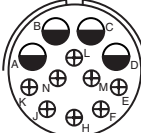
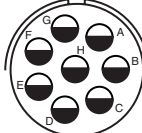
special arrangements

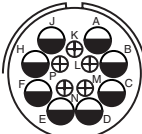
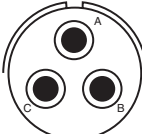
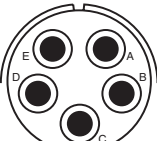
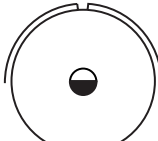
Ever expanding requirements for more complex circuits in ground equipment and elevated altitude applications has prompted Amphenol to provide inserts not covered by the MS drawings. Pictured here and on the following pages are insert layouts which have anywhere from one contact

(high tension) to the 78 contact insert in shell size 48. Many of these special inserts are also available in alternate keyway positions. Please contact Amphenol, Sidney, NY or your local Amphenol sales office for arrangements particular to your circuit application.

front face of pin insert or rear of socket insert illustrated

					
Insert Arrangement	16-59	20-51	20-57	20-58	20-59
Service Rating	A	A	A	A	A
Number of Contacts	4	3*	7*	5 5	3*
Contact Size	12	8	12 for #14 or 16 wire	12 16	8 for #10 or 12 wire

				
Insert Arrangement	20-66	20-79	22-63	22-65
Service Rating	A	H = D; Bal. = A	A	H = D; Bal. = A
Number of Contacts	1 5	7* 1*	4 8	8*
Contact Size	16 12 or #10 wire	16 12 for #16 wire	12 16	12 for #14 or 16 wire

				
Insert Arrangement	22-70	22-80	24-51	24-52
Service Rating	A	A	A	Hi-Volt
Number of Contacts	8 5	3*	5*	1
Contact Size	12 16	8 for #10 or 12 wire	B, E for AN #10 or 12 wire A, C, D for AN #8 wire	12

*Solderless

CONTACT LEGEND

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16

12

8

4

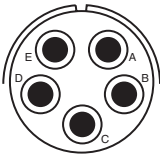
0

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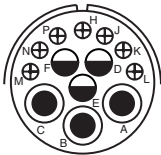
special arrangements

front face of pin insert or rear of socket insert illustrated

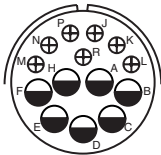
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



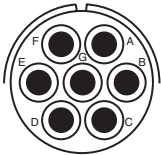
24-53
A
5*
8



24-58
A
3 3 7
8 12 16

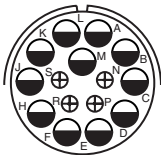


24-59
A
7 7
12 16

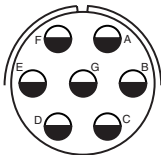


24-60
A
7*
8 for #10 or 12 wire

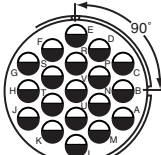
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



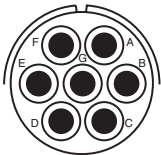
24-65
A
11 4
12 16



24-66
D
7
12

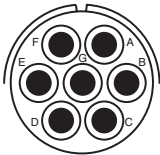


24-67
Inst.
19
12

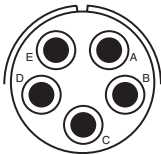


24-71
A
2* 5*
8 8 for #10 or 12 wire

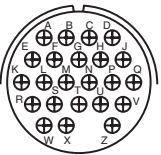
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



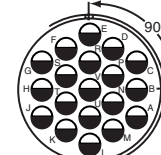
24-75
A
5 2
8 8 for #16 wire



24-79
A
5
8



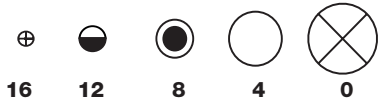
24-80
Inst.
23
16



24-84
A
1 18
12 12 (Coax) RG-188/U
or RG-174/U

*Solderless

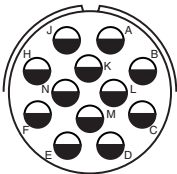
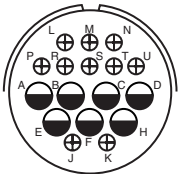
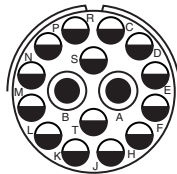
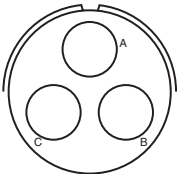
CONTACT LEGEND

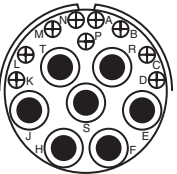
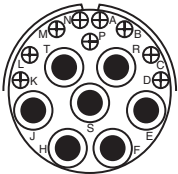
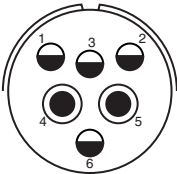


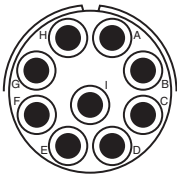
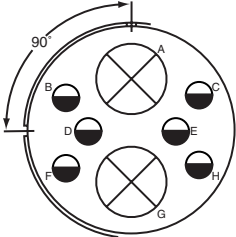
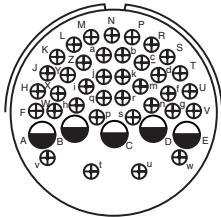
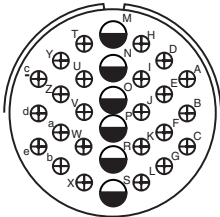
QWLD

special arrangements

front face of pin insert or rear of socket insert illustrated

Insert Arrangement				
Service Rating	A	A	A	—
Number of Contacts	12	7 10	2 14	3
Contact Size	12	12 16	8 12	4 (Coax) RG-59A/U or RG-62A/U

Insert Arrangement				
Service Rating	A	A	A	D
Number of Contacts	9* 4* 3*	9* 7*	7 9	2 4
Contact Size	16 8 8 for #10 wire (S, T, R)	16 8 for #10 wire	8 16	8 12

Insert Arrangement				
Service Rating	A	D	t, u = E; Bal. = Inst.	A
Number of Contacts	9	6 2	5 37	24 6
Contact Size	8	12 0	12 16	16 12 for #10 wire

*Solderless

CONTACT LEGEND

				
16	12	8	4	0

QWLD

special arrangements

front face of pin insert or rear of socket insert illustrated

Insert Arrangement	32-57	32-58	32-60	32-62
Service Rating	**	—	A	**
Number of Contacts	6 2	4	15 8	2 1 2 16 2
Contact Size	12 0 (Coax) RG-71/U	4 (Coax) RG-161U or RG-179/U	16 8 (Coax) RG-124/U	4 8 12 16 8 (Coax)RG-124/U

Insert Arrangement	32-64	32-68	32-75	32-76
Service Rating	Inst.	A	8, 9 = D	A
Number of Contacts	54	12 4	2 7	19
Contact Size	16	16 4 (Coax) RG-58C/U	12 8 (Coax) RG-180B/U	12

Insert Arrangement	32-79	36-51	36-54	36-55
Service Rating	D	D	A	A
Number of Contacts	4 1	2 2	8 31	31 8
Contact Size	4 8	0 4	8 16	16 8 for #6 wire

**Consult Sidney, NY for service rating of power contacts.

CONTACT LEGEND

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16

12

8

4

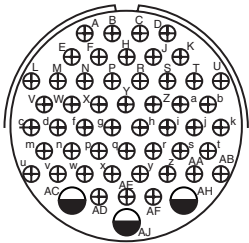
0

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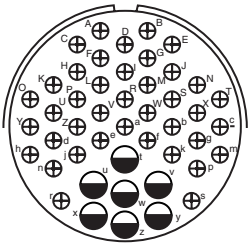
special arrangements

front face of pin insert or rear of socket insert illustrated

Insert Arrangement
Service Rating
Number of Contacts
Contact Size

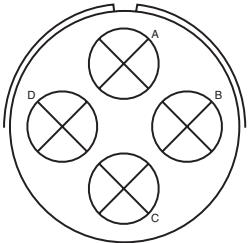


36-59
A
50 3
16 12 for #10 wire

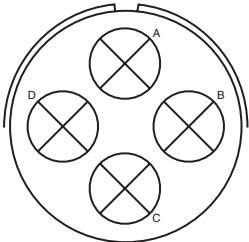


36-60

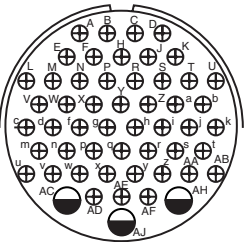
40 7
16 12 for #10 wire



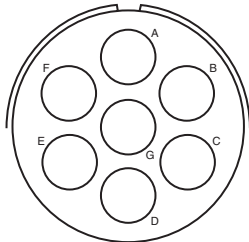
36-64
—
4
0 (Coax) RG-11/U
RG-12/U or RG-13/U



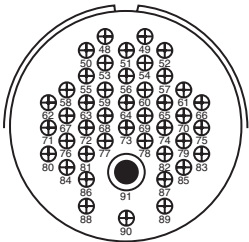
36-65
—
4
0 (Coax) RG-59/U, RG-62/U
or RG-71/U



36-71
A
3 50
12 16

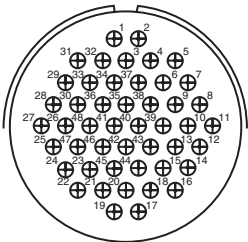


36-73
—
7
4 (Coax) RG-62B/U

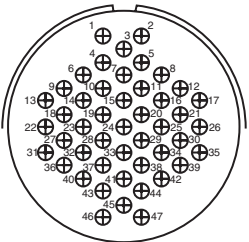


Insert Arrangement
Service Rating
Number of Contacts
Contact Size

36-74
A
43 1
16 8 (Coax) RG-187/U



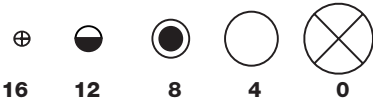
36-75
A
48
16 for #14 wire



36-76
A
47
16

**Consult Sidney, NY for service rating of power contacts.

CONTACT LEGEND

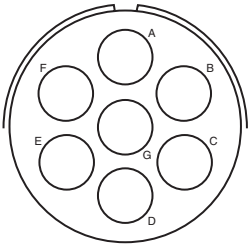


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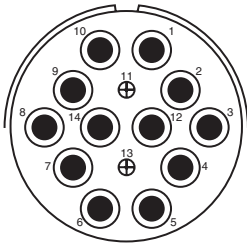
special arrangements

front face of pin insert or rear of socket insert illustrated

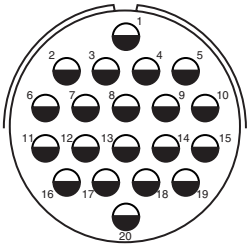
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



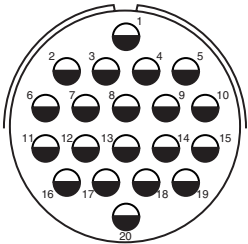
36-77
D
7
4



36-78
A
2 12
16 8

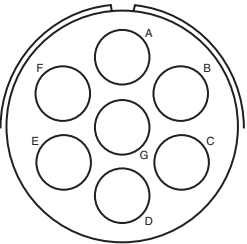


36-79
A
20
12

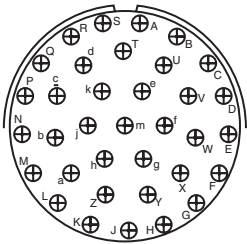


Insert Arrangement
Service Rating
Number of Contacts
Contact Size

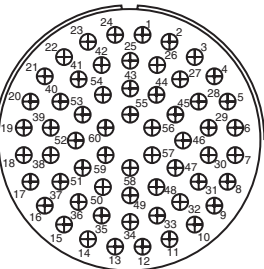
36-80
A
20
12 for #10 wire



36-83
-
7
4 (Coax) RG-58/U

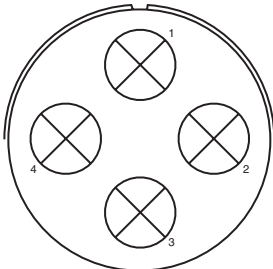


36-85
M = D; Bal. = A
35
16 for #12 wire

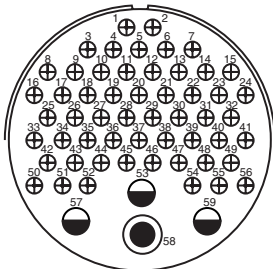


Insert Arrangement
Service Rating
Number of Contacts
Contact Size

40-53
A
60
16

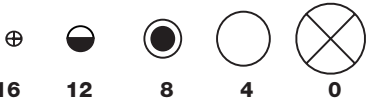


40-57
E
4
0



40-61
A
1 3 55
8 12 16

CONTACT LEGEND

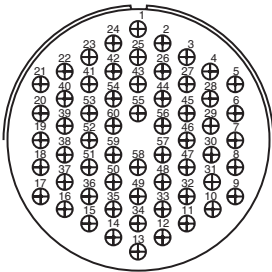


QWLD

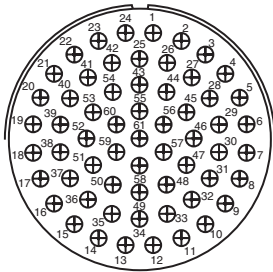
special arrangements

front face of pin insert or rear of socket insert illustrated

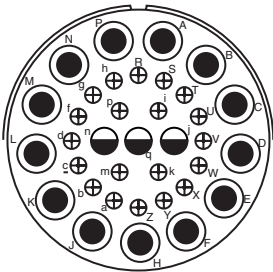
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



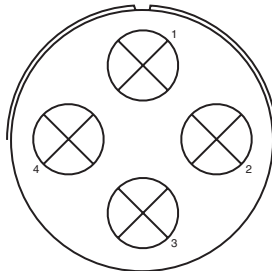
40-62
A
60
16



40-63
A
61
16 for #14 wire

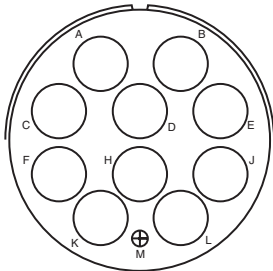


40-64
-
3 20 13
12 16 8 (Coax) RG-124/U

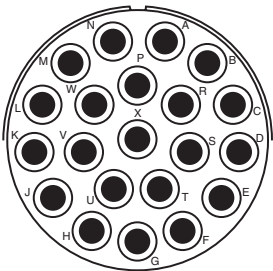


Insert Arrangement
Service Rating
Number of Contacts
Contact Size

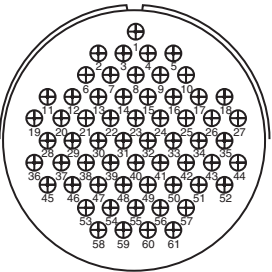
40-66
-
4
0 (Coax) RG-63B/U



40-67
A
1 10
16 4 (Coax) RG-59/U

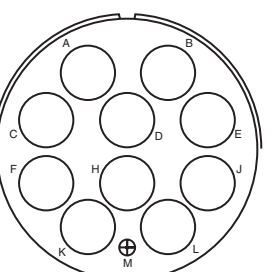


40-68
A
21
8

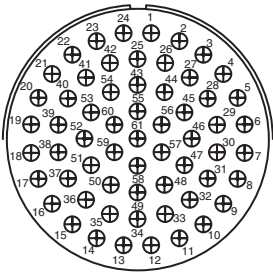


Insert Arrangement
Service Rating
Number of Contacts
Contact Size

40-70
A
61
16



40-72
A
1 10
16 4 (Coax) RG-9B/U



40-73
A
61
16

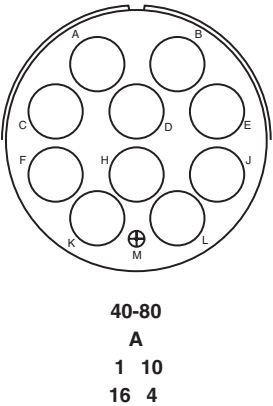
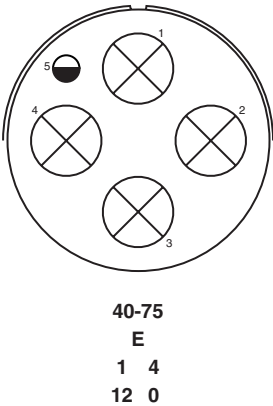
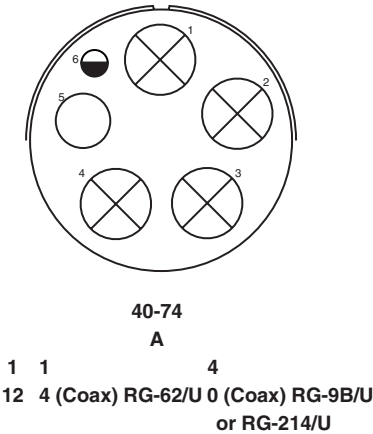


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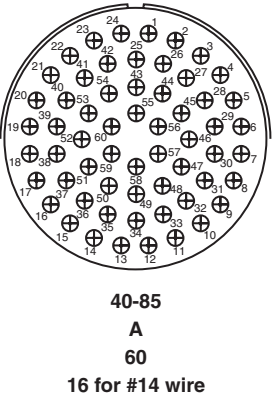
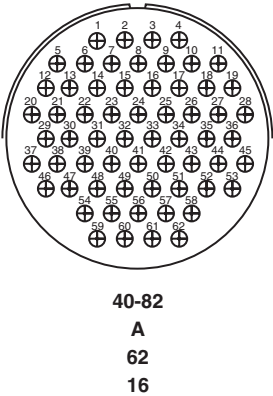
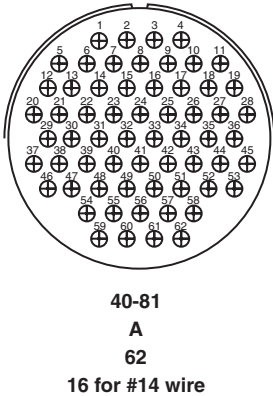
special arrangements

front face of pin insert or rear of socket insert illustrated

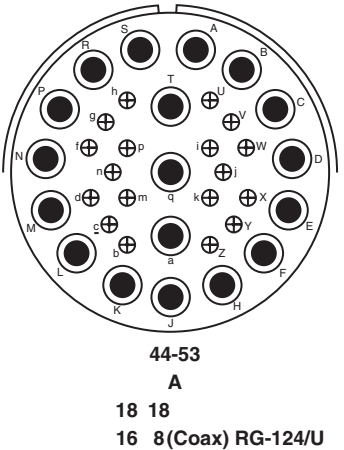
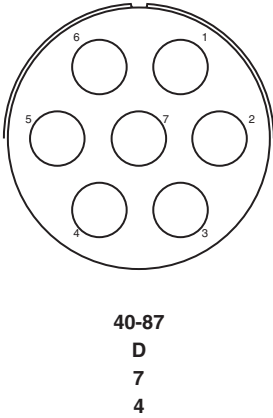
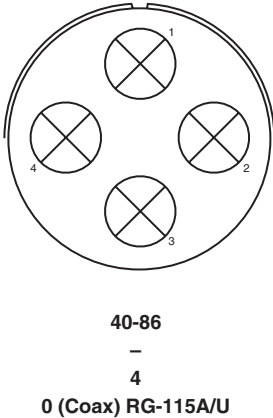
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



Insert Arrangement
Service Rating
Number of Contacts
Contact Size



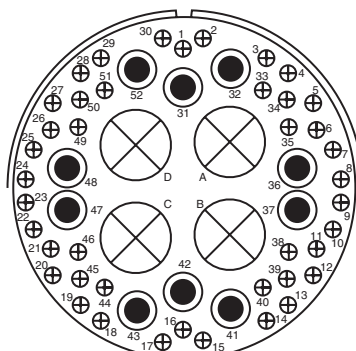
Insert Arrangement
Service Rating
Number of Contacts
Contact Size



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special arrangements

front face of pin insert or rear of socket insert illustrated



48-51†

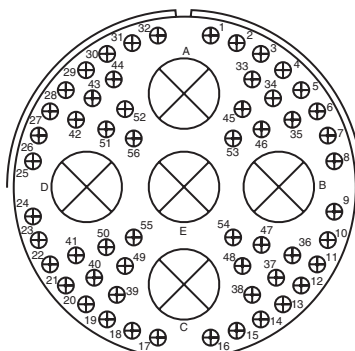
Insert Arrangement

Service Rating

Number of Contacts

Contact Size

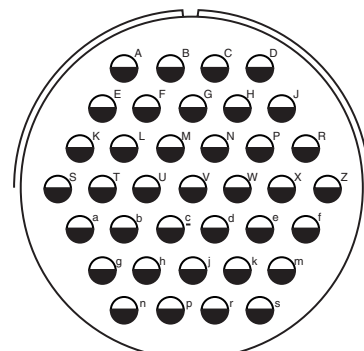
42 10 4
16 8 0 (Coax) RG-41/U



48-52†

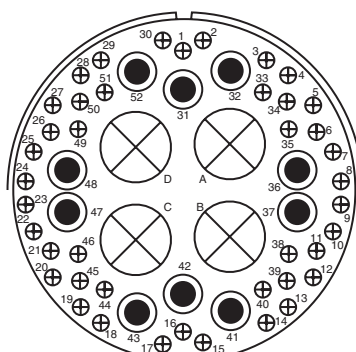
A

56 5
16 0 (Coax) RG-41/U



48-53†

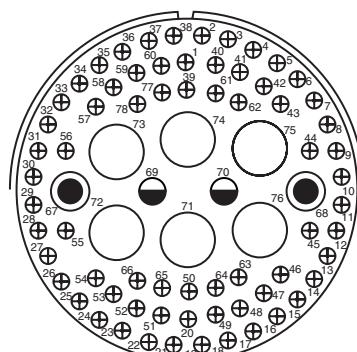
D

37
12

48-54†

A

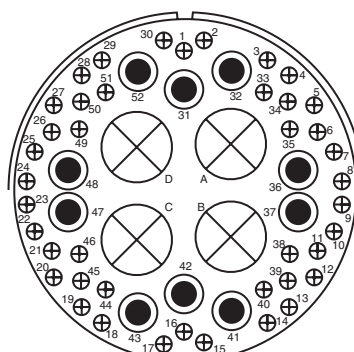
42 10 4
16 8 0 (Coax) RG-59/U



48-55†

A

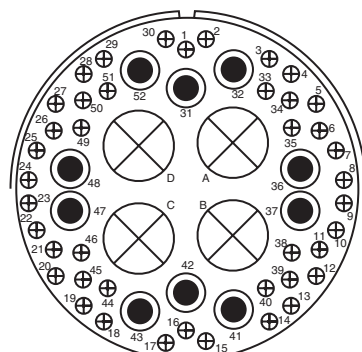
68	2	2	6
16	12	8	4



48-57†

A

42	10	4
16	8	0



48-60†

A

42 10 4
16 8 0 (Coax) RG-214/U

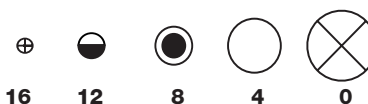
Insert Arrangement

Service Rating

Number of Contacts

Contact Size

†Consult Sidney, NY for availability



QWLD

thermocouple contact availability

A complete line of cylindrical connectors containing thermocouple insert arrangements is available. The contact layout for a particular arrangement will be found in either the MIL-C-22992, QWLD contact arrangement section, pages 27-38, or the Special contact arrangement section, pages 39-47. All thermocouple contact layouts may contain either iron, alumel, chromel, constantan, standard (copper) or brass (dummy) contacts. See the thermocouple tabulations on the following pages.

The following abbreviations are used in the contact material column in the charts that follow. Also, thermocouple contacts are color coded as shown. (This identification is made by means of small dots of stain on solder well end of the contact.)

Abbreviation	Material	Color Code
Ir.	Iron	Black
Con	Constantan	Yellow
Cu.	Copper Alloy	N/A
Ch.	Chromel	White
Al.	Alumel	Green
Dummy	Brass	N/A

WIRE WELL DATA

Contact Size	Well Inside Dia. + .004 - .002	Well Depth + .031 - .000	Solder Well Barrel Outside Dia.
12	.125	.250	.166 ±.003
16	.094	.188	.125 +.002 -.004

RECOMMENDED WIRE

I Chromel-Alumel	Use wire in accordance with MIL-W-5848
II Iron-Constantan	Use wire in accordance with MIL-W-5845

QWLD

thermocouple arrangements

Shell Size and Arrg.	Similar to MS Arrg.	Total Contacts	Contact Size		Pin Insert Rotation CW	Contact Material
			12	16		
14-59	14-53	6		6	None	A = Al.; B = Ch.; C = Ir.; D = Con.; E, F = Cu.
16-52	16-11	2	2		90°	A = Al.; B = Ch.
16-53	16-9	4	2	2	70°	A = Al.; C = Ch.; B, D = Cu.
16-55	16-10	3	3		45°	A = Al.; B = Ch.; C = Cu.
16-56	16-13	2	2		90°	A = Con.; B = Cu.
16-57	16-10	3	3		None	A = Al.; B = Cu.; C = Ch.
16-58	16-10	3	3		None	A = Con.; B, C = Cu.
16-60	16-13	2	2		None	A = Al.; B = Ch.
16-62	16-11	2	2		None	A = Con.; B = Cu.
16-67	16-11	2	2		None	A = Al.; B = Ch.
16-68	16-9	4	2	2	None	A, B, C = Ch.; D = Al.
18-51	18-12	6		6	None	A = Ir.; B, E = Con.; D = Cu.; C, F = Dummy
18-52	18-11	5	5		None	A = Ir.; B = Con.; C = Ch.; D = Al.; E = Dummy
18-53	18-12	6		6	None	A, D = Ir.; B, E = Con.; C, F = Dummy
18-54	18-15	4	4		None	A, C = Al.; B, D = Ch.
18-56	18-1	10		10	45°	A, C, E, G, I = Ir.; B, D, F, H, J = Con
18-57	18-12	6		6	45°	A, C, E = Al.; B, D, F = Ch.
18-59	18-12	6		6	45°	A, C = Ir.; B, E, F = Con.; D = Cu.
18-60	18-11	5	5		45°	A, D = Al.; B, C = Ch.; E = Al.
18-61	18-12	6		6	None	A, C = Ir.; B, D = Con.; E = Ch.; F = Al.
18-62	18-12	6		6	None	A, B, D = Ir.; D, E, F = Con.
18-63	18-15	4	4		None	A, C = Con.; B, D = Cu.
18-65	18-12	6		6	None	A = Ir.; B = Con.; Balance = Cu.
18-66	18-1	10		10	None	A, C, E, G, I = Cu.; B, D, F, H, J = Con.
18-67	18-12	6		6	None	A, C, E = Cu.; B, D, F = Con.
18-68	18-11	5	5		None	A, D = Al.; B, C = Ch.; E = Cu.
18-69	18-1	10		10	None	A = Al.; B = Ch.; Balance = Cu.
18-70	18-11	5	5		None	A = Ir.; B = Con.; C = Ch.; D = Al.; E = Cu.
18-71	18-15	4	4		None	A = Con.; Balance = Cu.
18-72	18-15	4	4		None	D = Con.; Balance = Cu.
18-73	18-9	7	2	5	None	A = Al.; D = Ch; Balance = Cu.
18-74	18-12	6		6	None	A = Ch.; B = Al.; D = Ir.; E = Cu.; C, F = Con.
18-76	18-1	10		10	None	A, C, E, G, I = Al.; B, D, F, H, J = Ch.
18-77	18-1	10		10	None	A, C, E, G = Al.; B, D, F, H = Ch.; Bal. = Cu.
18-78	18-1	10		10	None	A = Al.; B = Ch.; D, F, H, J = Con.; Bal. = Cu.
18-79	18-12	6		6	None	A, F = Ir.; B, E = Con.; C, D = Cu.
18-80	18-15	4	4		None	A, C = Cu.; B, D = Con.
18-81	18-1	10		10	None	E, G = Con.; Bal. = Cu.
18-82	18-1	10		10	None	E, G = Con.; F, H = Ir.; Bal = Cu.
20-52	20-4	4	4		315°	A = Ir.; B = Con.; C = Ch.; D = Al
20-56	20-7	8		8	45°	A, B, G, H = Ir.; C, D, E, F = Con.
20-60	20-7	8		8	45°	D = Ch.; E = Al.; Balance = Cu.
20-61	20-29	17		17	45°	A, B, M = Cu.; Balance = Con.
20-62	20-15	7	7		80°	A, C, E, = Al.; B, D, F, = Ch.; G = Cu.

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thermocouple arrangements

Shell Size and Arrg.	Similar to MS Arrg.	Total Contacts	Contact Size		Pin Insert Rotation CW	Contact Material
			12	16		
20-64	20-27	14		14	None	A = Al.; C = Ch.; Balance = Cu.
20-65	20-27	14		14	None	A, B, C, D, E, F, G = Ir.; H, I, J, K, L, M, N = Con.
20-67	20-16	9	2	7	None	H = Al.; I = Ch.; Balance = Cu.
20-68	20-7	8		8	None	A, B, G, H = Con.; C, D, E, F = Cu.
20-69	20-27	14		14	None	A, B, C, D, E, F, G = Cu.; H, I, J, K, L, M, N = Con.
20-70	20-29	17		17	None	A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S = Con.
20-71	20-29	17		17	None	S = Al.; R = Ch.; Balance = Cu.
20-74	20-29	17		17	None	A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T = Cu.
20-75	20-15	7	7		None	G = Al.; Balance = Ch.
20-77	20-16	9	2	7	None	A = Con.; Balance = Std.
20-80	20-27	14		14	None	A, C, E, G, I, K, M = Cu.; B, D, F, H, J, L, N = Con.
20-81	20-27	14		14	None	A, C, E, G, I, K, M = Ch.; B, D, F, H, J, L, N = Al
20-82	20-29	17		17	None	A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; T = Cu.
20-85	20-33	11		11	None	K, L = Al.; Bal. = Ch.
20-87	20-29	17		17	None	A, C, E, G, J, L, N, R = Con.; Bal. = Cu.
20-88	20-27	14		14	None	A, C, E = Al.; B, D, F = Ch.; G, H, K, N = Con.; Bal. = Cu.
20-89	20-27	14		14	None	B, D, F, H, J, L = Al.; A, C, E, G, I, K = Ch., M, N = Cu.
20-90	20-27	14		14	None	C, G, I = Ch.; K, L, M = Al.; Bal. = Cu.
20-91	20-27	14		14	None	I = Ch.; K = Al.; Bal. = Cu.
20-92	20-7	8		8	None	A = Al.; H = Cu.; Bal. = Ch.
20-93	20-27	14		14	None	A = Ch.; B = Al.; Bal. = Cu.
20-94	20-15	7	7		None	A, C, E = Al.; B, D, F = Ch.; G = Cu.
20-99	20-33	11		11	None	A = Al.; Bal. = Ch.
22-57	22-14	19		19	45°	A, C, E, G, J, L, N, R = Ir.; B, D, F, H, K, M, P, S = Con.; T, U, V = Cu.
22-60	22-14	19		19	45°	U = Al.; N = Ch.; Bal. = Cu.
22-62	22-23	8	8		60°	A, B, F, G = Al.; C, D, E, H = Ch.
22-68	22-19	14		14	45°	A, C, E, G, J, L, M = Ir.; B, D, F, H, K, P, N = Con.
22-69	22-19	14		14	45°	A, C, E, G, J, L, M = Cu.; B, D, F, H, K, P, N = Con.
22-71	22-14	19		19	None	V = Al.; U = Ch.; Balance = Cu.
22-72	22-5	6	2	4	None	B = Al.; E = Ch.; Balance = Cu.
22-73	22-5	6	2	4	None	E = Al.; B = Ch.; Balance = Cu.
22-74	22-23	8	8		None	A, C, E, G = Ir.; B, D, F, H = Con.
22-75	22-23	8	8		None	A = Al.; B, D, G, H = Cu.; C = Ch.; E = Ir.; F = Con
22-76		21		21	None	W = Con.; Balance = Cu.
22-77	22-19	14		14	None	B, D, F, H, J, K, M, P = Cu.; A, E, L = Ir.; C, G, N = Con.
22-78	22-14	19		19	None	A, C, E, G, H, K, M, P, R, T = Con.; Balance = Cu.
22-79	22-10	4		4	None	A, C = Con.; B, D = Cu.
22-82	22-14	19		19	None	A, C, E, G, J, L, N, R, T = Ir.; B, D, F, H, K, M, P, S, U = Con.; V = Cu.
22-83	22-18	8		8	None	A, C, E, G = Al.; B, D, F, H = Ch.
22-84	22-14	19		19	None	A, C, S = Ch.; B, D, T = Al.; Bal. = Cu.
22-85	22-19	14		14	None	A, C, E, G, J, L, N = Al.; B, D, F, H, K, M, P = Ch.
22-89	22-88	7	7		None	A, C, E = Ir.; B, D, F = Con.; G = Cu.
24-56	24-20	11	2	9	45°	E = Al.; F = Ch.; Balance = Cu.
24-57	24-26	24		24	45°	A, C, J, V, Y, W, K, E, H, U, S, M = Ch.; Balance = Al
24-62	24-28	24		24	None	A, C, E, G = Ir.; B, D, F, H = Con.; R, T = Ch.; S, U = Al.; Balance = Cu.

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Shell Size and Arrg.	Similar to MS Arrg.	Total Contacts	Contact Size		Pin Insert Rotation CW	Contact Material
			12	16		
24-63	24-28	24		24	None	A, C, E, G, J, L, K, N, S, U, W, Y = Cu.; B, D, F, H, Q, R, M, P, T, V, X, Z = Con.
24-64	24-5	16		16	None	A, B, C, D, E, F, G, H = Ir.; J, K, L, M, N, P, R, S = Con.
24-68	24-28	24		24	None	D = Con.; Balance = Cu.
24-81	24-7	16	2	14	None	A, C, E, G, I, K, M, N, P = Cu.; B, D, F, H, J, L, O = Con.
24-88	24-28	24		24	None	A, B, C, D, E, F, G, H, J, K, L, M = Con.; Bal. = Ir.
24-91	24-5	16		16	None	A, B, C, D, E, F, G, H = Al.; J, K, L, M, N, P, R, S = Ch.
28-53	28-11	22	4	18	45°	J, L = Al.; K, M = Ch.; Balance = Cu.
28-58	28-20	14	10	4	45°	A, C, E, G, K, M = Al.; B, D, F, H, L, N = Ch.; J, P = Cu.
28-61	28-21	37		37	45°	A, C, J, Z, m, r, n, a, K, F, H, X, k, h, T, M, N, d = Ir.; Balance = Con.
28-63	28-20	14	10	4	45°	A, C, E, G, J = Al.; B, D, F, H, P = Ch.; Balance = Cu.
28-64	28-15	35		35	None	A, d = Al.; B, j = Ch.; C, D, E, F, G, N, P, R, S, H, J, K, L, M, W, X, Y, Z = Con.; Balance = Cu.
28-65	28-12	26		26	None	A, C, E, G, J, L, N, R, T, V = Ir.; X, Z = Al.; B, D, F, H, K, M, P, S, U, W = Con.; Y, a = Ch.; b, d = Cu.
28-67	28-16	20		20	None	U = Con.; Balance = Cu.
28-68	28-15	35		35	45°	T = Al.; U = Ch.; Balance = Cu.
28-69	28-11	22	4	18	None	G = Al.; R = Ch.; Balance = Cu.
28-70	28-11	22	4	18	None	A = Al.; B = Ch.; Balance = Cu.
28-77	28-11	22	4	18	None	J = Con.; Balance = Cu.
28-81	28-21	37		37	None	A, D, S, Z, n, s = Ir.; B, J, K, f, g, r = Con.; G, L, P, b, e, j = Al.; F, H, T, X, h, k = Ch.; Balance = Cu.
28-85	28-11	22	4	18	45°	K, M = Al.; J, L = Ch.; Bal. = Cu.
28-91	28-9	12	6	6	None	M = Ir.; L = Con.; Bal. = Cu.
28-94	28-12	26		26	None	B, D, F, H, K, M, P, S, U, W, Y, a, d = Al.; Bal. = Ch.
28-98	28-21	37		37	None	M = Al.; F = Ch.; Bal. = Cu.
28-99	28-12	26		26	None	B, D, F, H, K, M, P, S, U, W, Y, a = Con.; Bal. = Cu.
28-AC	28-16	20		20	None	A, C, E, G, J, L = Ir.; B, D, F, N, K, M = Con.; Bal. = Cu.
28-AD	28-21	37		37	45°	A, C, F, H, J, K, M, N, T, X, Z, a, d, h, k, m, n, r = Cu.; Bal. = Cu.
28-AE	28-21	37		37	None	A, C, E, G, J, L, N, R, T, V, X, a, c, e, g, j, m, p, s = Cu.; Bal. = Con.
28-AF	28-18	12		12	None	A, C, E, G, J, L = Ch.; Bal. = Al.
28-AG	28-12	26		26	None	A, C, E, G, J, L, N, R = Al.; B, D, F, H, K, M, P, S = Ch.; Bal. = Cu.
28-AK	28-21	37		37	45°	A, B, C, D, J, K, L, M, N, P, a, b, c, d, e, m, p = Ch.; n = Cu.; Bal. = Al.
32-51	32-8	30	6	24	90°	M = Ch.; N = Al.; Balance = Cu.
32-55	32-8	30	6	24	125°	M, N = Ch.; O, P = Al.; Balance = Cu.
32-91	32-64	54		54	None	A, C, E, G, J, L, N, P, S, U, W, Y, a, c, e, g, j, m = Ir.; B, D, F, H, K, M, O, R, T, V, X, Z, b, d, f, h, k, n = Con.; Bal. = Cu.
36-53	36-7	47	7	40	45°	u, v, w = Al.; x, y, z = Ch.; Balance = Cu.
36-56	36-10	48		48	None	A, C, E, G, L, J, H, P, R, T, V, X, Z, b, d, f, h, k, q, n, m, u, w, y = Con.; Bal. = Cu.
36-57	36-8	47	1	46	None	W = Al.; f = Ch.; Balance = Cu.
36-58	36-15	35		35	None	H = Al.; G = Ch.; Balance = Cu.
36-61	36-15	35		35	None	A, C, E, J, K, L, M, N, P, R, T, V, f, X, Y, h, j, c = Con.; Balance = Cu.
36-62	36-10	48		48	None	A, C, E = Al.; B, D, F = Ch.; Balance = Cu.
36-82	36-52*	52		52	None	v, g = Ir.; p, y, c = Con.; x = Ch.; Balance = Cu.

* Amphenol arrangement

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thermocouple arrangements

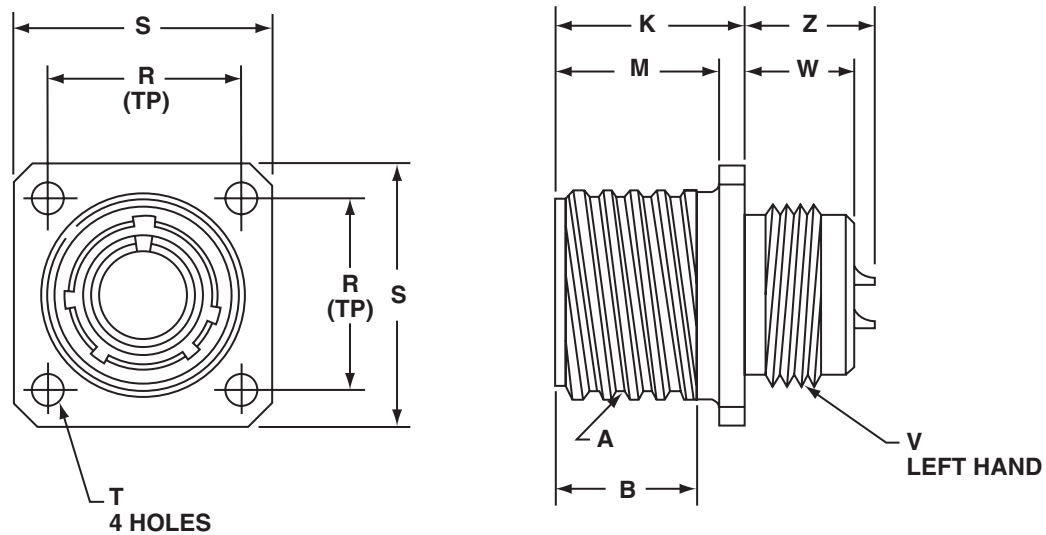
Shell Size and Arrg.	Similar to MS Arrg.	Total Contacts	Contact Size		Pin Insert Rotation CW	Contact Material
			12	16		
36-86	36-10	48		48	None	A, C, E, G, J, L, N, P, R, T, V, X = Al.; B, D, F, H, K, M, O, Q, S, U, W, Y = Ch.; z, b, d, f, h, k, n, q, s, u, w, y = Con.; a, c, e, g, j, m, p, r, t, v, x, z = Cu.
36-88	36-52	52		52	None	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF = Cu.; Bal. = Con.
40-58	40-56*	85		85	None	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF, AJ, AL, AN, AP, AS, AU, AW, AY, BA, BC, BE, BH, BK, BM, BP, BS, BU = Ir.; Balance = Con.
40-59	40-56*	85		85	None	B = Ch.; C = Con.; Balance = Cu.
40-77	40-53*	60		60	None	55, 60 = Ir.; 57, 58, 59 = Con.; 56 = Ch.; Balance = Cu.
40-78	40-53*	60		60	None	50, 51 = Ir.; 27, 28, 29, 31, 32, 34, 36, 37 = Con.; 25, 39, 40, 41 = Al.; 43, 44, 45, 46, 47, 48, 49, 52, 53, 54 = Ch.; Balance = Cu.
40-88	40-53	60		60	None	1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59 = Con.; Bal. = Cu.
40-AA	40-56	85		85	None	A, C, E, H, K, M, P, S, U, W, Y, a, c, f, h, j, m, p, r, t, v, x, z, AB, AD, AF, AJ, AL, AN, AR, AT = Cu.; B, D, F, J, L, N, R, T, V, X, Z, b, d, g, i, k, n, q, s, u, w, y, AA, AC, AE, AH, AK, AM, AP, AS = Con.; AU, AW, AY, BA, BC, BE, BH, BK, BM, BP, BS, BU = Cu.; AV, AX, AZ, BB, BD, BF, BJ, BL, BN, BR, BT, BV = Al.
44-57	44-52	104		104	None	A, C, E, G, J, L, etc. = Cu.; B, D, F, H, K, M, etc. = Con.
44-59	44-52	104		104	None	34 = Con.; 70 = Cu.
44-60	44-52	104		104	None	A, C, E, etc. = Ch.; (52); B, D, F, etc. = Al.; (52)
44-62	44-52	104		104	None	BY, BZ, CA, CB, CC, CD, CE, CR = Al.; CH, CJ, CK, CL, CM, CN, CP, CS = Ch.; Bal. = Cu.

* Amphenol arrangement

MIL-C-22992, QWLD

MS17343 or 10-1940XX

wall mount receptacle

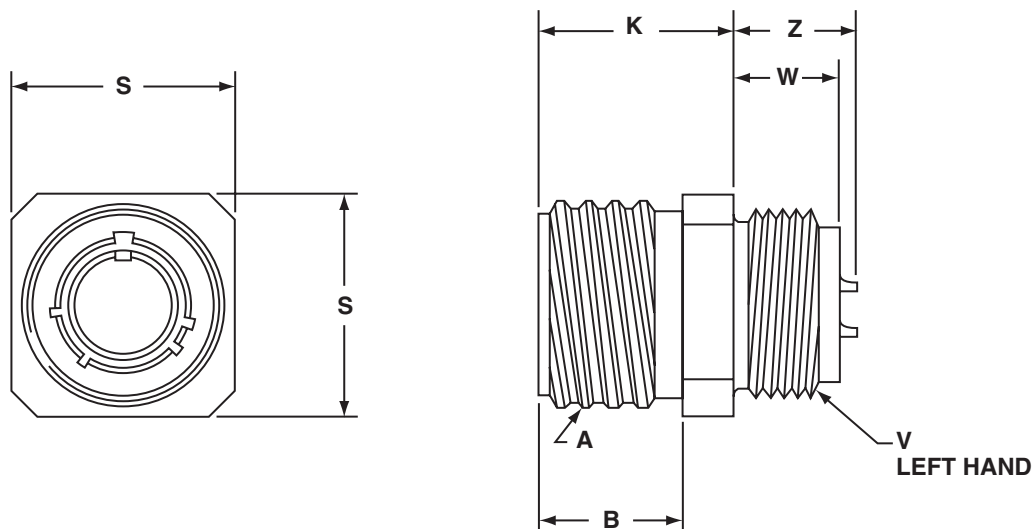


All dimensions for reference only.

Part Number*	Shell Size	A Thread Class 2A (Plated) 0.1P-0.2L Double Stub	B Min Full Thd	K +.021 -.020	M +.010 -.000	R (TP)	S +.021 -.020	T Dia +.004 -.003	V Thread Class 2A-LH (Plated)	W ±.010	Z Max
10-194013	12	.8750	.672	.937	.797	.906	1.188	.150	.750-20UNEF	.640	.700
10-194015	14	1.0000	.672	.937	.797	.969	1.281	.150	.875-20UNEF	.640	.700
10-194017	16	1.1250	.672	.937	.797	1.062	1.375	.150	1.000-20UNEF	.640	.700
10-194018	18	1.2500	.672	.953	.797	1.156	1.500	.177	1.125-18UNEF	.625	.686
10-194020	20	1.3750	.672	.953	.797	1.250	1.625	.177	1.250-18UNEF	.625	.686
10-194022	22	1.5000	.672	.953	.797	1.375	1.750	.177	1.375-18UNEF	.625	.686
10-194024	24	1.7500	.672	1.047	.859	1.562	2.000	.177	1.625-18UNEF	.594	.585
10-194028	28	2.0000	.672	1.047	.859	1.750	2.250	.177	1.875-16UN	.594	.591
10-194032	32	2.2500	.672	1.109	.922	1.938	2.500	.209	2.0625-16UNS	.530	.528
10-194036	36	2.5000	.672	1.109	.922	2.188	2.750	.209	2.3125-16UNS	.530	.528
10-194040	40	2.7500	.672	1.109	.922	2.375	3.000	.209	2.625-16UN	.703	.528
10-194044	44	3.0000	.672	1.109	.922	2.625	3.250	.209	2.875-16UN	.703	.770
10-194048†	48†	3.2500	.672	1.109	.922	2.875	3.500	.209	3.125-16UN	.703	.770

*To complete 10- part number or to complete MS part number, see how to order, pg. 22.
†Shell size 48 available in proprietary versions only. Consult Sidney, NY for availability and ordering information.

MIL-C-22992, QWLD MS17345 or 10-1941XX cable connecting plug



All dimensions for reference only.

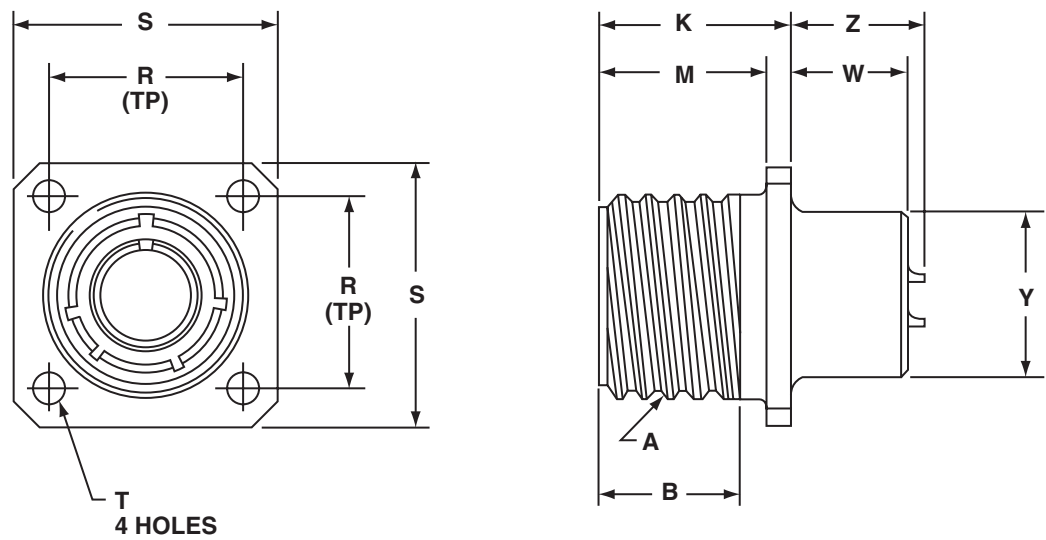
Part Number*	Shell Size	A Thread Class 2A (Plated) 0.1P-0.2L Double Stub	B +.016 -.000	K +.021 -.020	S +.021 -.020	V Thread Class 2A-LH (Plated)	W ±.010	Z Max
10-194113	12	.8750	.688	.938	1.000	.750-20UNEF	.641	.696
10-194115	14	1.0000	.688	.938	1.094	.875-20UNEF	.641	.696
10-194117	16	1.1250	.688	.938	1.281	1.000-20UNEF	.641	.696
10-194118	18	1.2500	.703	.957	1.375	1.125-18UNEF	.625	.680
10-194120	20	1.3750	.703	.957	1.500	1.250-18UNEF	.625	.680
10-194122	22	1.5000	.703	.957	1.625	1.375-18UNEF	.625	.680
10-194124	24	1.7500	.766	1.016	1.875	1.625-18UNEF	.625	.617
10-194128	28	2.0000	.766	1.016	2.125	1.875-16UN	.625	.617
10-194132	32	2.2500	.703	1.078	2.375	2.0625-16UN	.563	.555
10-194136	36	2.5000	.703	1.078	2.625	2.3125-16UN	.563	.555
10-194140	40	2.7500	.703	1.078	3.000	2.625-16UN	.703	.555
10-194144	44	3.0000	.703	1.078	3.250	2.875-16UN	.703	.805

*To complete 10- part number or to complete MS part number, see how to order, pg. 22.

MIL-C-22992, QWLD

MS17346 or 10-1942XX

box mount receptacle



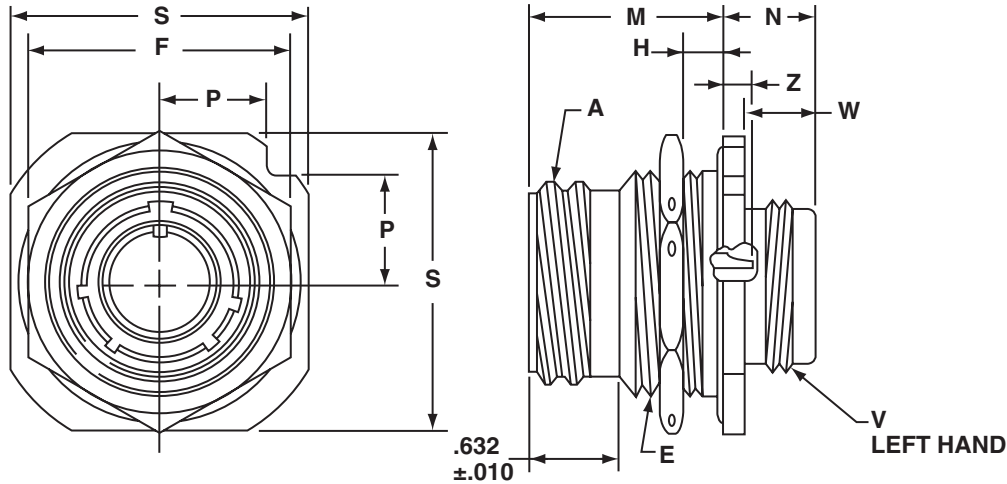
All dimensions for reference only.

Part Number*	Shell Size	A Thread Class 2A (Plated) 0.1P-0.2L Double Stub	B Min Full Thd	K +.021 -.010	M +.010 -.000	R (TP)	S +.021 -.020	T Dia +.004 -.003	W +.020 -.030	Y +.011 -.010	Z Max
10-194213	12	.8750	.672	.938	.797	.906	1.188	.150	.640	.640	.700
10-194215	14	1.0000	.672	.938	.797	.969	1.281	.150	.640	.765	.700
10-194217	16	1.1250	.672	.938	.797	1.062	1.375	.150	.640	.890	.700
10-194218	18	1.2500	.672	.953	.797	1.156	1.500	.177	.625	1.015	.686
10-194220	20	1.3750	.672	.953	.797	1.250	1.625	.177	.625	1.171	.686
10-194222	22	1.5000	.672	.953	.797	1.375	1.750	.177	.625	1.296	.686
10-194224	24	1.7500	.672	1.047	.859	1.562	2.000	.177	.594	1.421	.585
10-194228	28	2.0000	.672	1.047	.859	1.750	2.250	.177	.594	1.625	.591
10-194232	32	2.2500	.672	1.110	.922	1.938	2.500	.209	.531	1.891	.528
10-194236	36	2.5000	.672	1.110	.922	2.188	2.750	.209	.531	2.078	.528
10-194240	40	2.7500	.672	1.110	.922	2.375	3.000	.209	.531	2.312	.528
10-194244	44	3.0000	.672	1.110	.922	2.625	3.250	.209	.531	2.562	.778

*To complete 10- part number or to complete MS part number, see how to order, pg. 22.

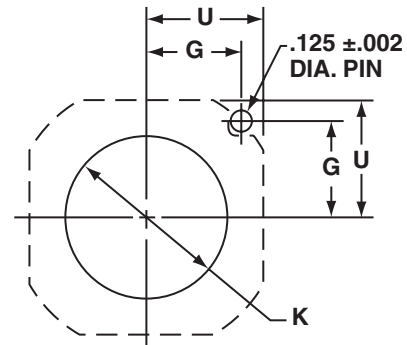
MIL-C-22992, QWLD MS17347 or 10-1943XX

jam nut receptacle (wall mount)



Shell Size	K Dia. +.005 -.000	G ±.003	U ±.005
12,13	1.005	.562	.688
14,15	1.130	.606	.750
16,17	1.255	.699	.875
18	1.380	.739	.938
20	1.505	.783	1.000
22	1.630	.830	1.062
24	1.880	.919	1.188
28	2.130	1.007	1.312
32	2.380	1.096	1.438
36	2.630	1.183	1.562
40	2.880	1.292	1.703

MOUNTING DIMENSIONS



All dimensions for reference only.

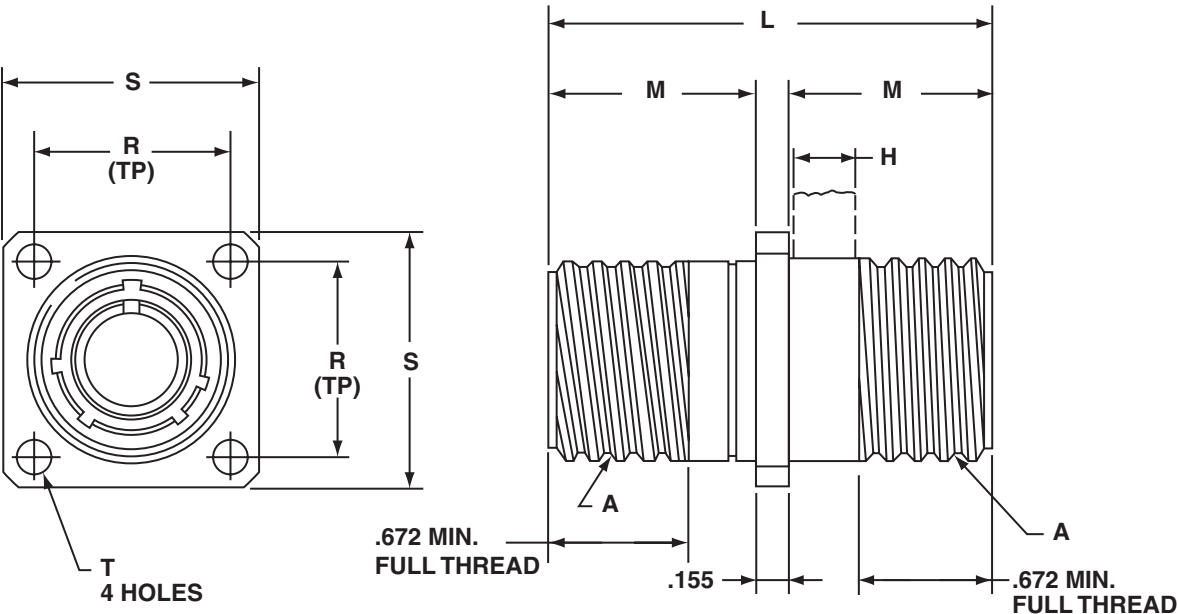
Part Number*	Shell Size	A Thread Class 2A (Plated) 0.1P-0.2L Double Stud	E Thread Class 2A (Plated)	F Hex +.017 -.016	H Panel Thickness		M ±.010	N +.021 -.020	P ±.010	S +.011 -.010	V Thread Class 2A-LH (Plated)	W ±.010	Z Max
					Min	Max							
10-194313	12	.8750	1.000-20UNEF	1.250	.094	.188	1.141	.641	.486	1.375	.750-20UNEF	.516	.483
10-194315	14	1.0000	1.125-18UNEF	1.312	.094	.188	1.141	.641	.530	1.500	.875-20UNEF	.516	.483
10-194317	16	1.1250	1.250-18UNEF	1.500	.094	.188	1.141	.703	.623	1.750	1.000-20UNEF	.516	.483
10-194318	18	1.2500	1.375-18UNEF	1.562	.094	.203	1.156	.703	.663	1.875	1.125-18UNEF	.516	.467
10-194320	20	1.3750	1.500-18UNEF	1.750	.094	.203	1.156	.703	.707	2.000	1.250-18UNEF	.516	.467
10-194322	22	1.5000	1.625-18UNEF	1.875	.094	.203	1.156	.703	.751	2.125	1.375-18UNEF	.516	.467
10-194324	24	1.7500	1.875-16UN	2.125	.094	.265	1.219	.703	.840	2.375	1.625-18UNEF	.516	.404
10-194328	28	2.0000	2.125-16UN	2.375	.094	.277	1.231	.785	.928	2.625	1.875-16UN	.516	.392
10-194332	32	2.2500	2.375-16UN	2.625	.094	.215	1.231	.785	1.017	2.875	2.0625-16UN	.516	.392
10-194336	36	2.5000	2.625-16UN	2.875	.094	.215	1.231	.785	1.104	3.125	2.3125-16UN	.516	.392
10-194340	40	2.7500	2.875-16UN	3.125	.094	.215	1.231	.972	1.213	3.406	2.625-16UN	.703	.392
10-194344	44	3.0000	3.125-16UN	3.375	.094	.215	1.231	.972	1.299	3.656	2.875-16UN	.703	.642

*To complete 10- part number or to complete MS part number, see how to order, pg. 22.

QWLD

10-1944XX

thru bulkhead receptacle

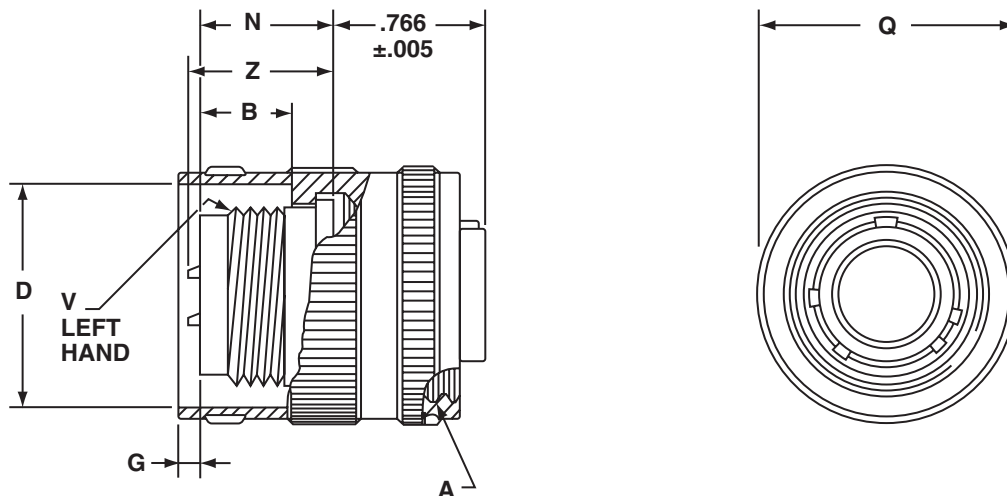


All dimensions for reference only.

Part Number*	Shell Size	A Thread Class 2A (Plated) 0.1P-0.2L Double Stub	H Max	L ±.015	M +.000 -.010	R (TP)	S +.021 -.020	T Dia +.004 -.003
10-194413	12	.8750	.312	2.219	1.032	.906	1.188	.150
10-194415	14	1.0000	.312	2.219	1.032	.969	1.281	.150
10-194417	16	1.1250	.312	2.219	1.032	1.062	1.375	.150
10-194418	18	1.2500	.312	2.219	1.032	1.156	1.500	.177
10-194420	20	1.3750	.312	2.219	1.032	1.250	1.625	.177
10-194422	22	1.5000	.312	2.219	1.032	1.375	1.750	.177
10-194424	24	1.7500	.312	2.219	1.032	1.562	2.000	.177
10-194428	28	2.0000	.312	2.219	1.032	1.750	2.250	.177
10-194432	32	2.2500	.312	2.219	1.032	1.938	2.500	.209
10-194436	36	2.5000	.312	2.219	1.032	2.188	2.750	.209
10-194440	40	2.7500	.312	2.219	1.032	2.375	3.000	.209
10-194444	44	3.0000	.447	2.469	1.157	2.625	3.250	.209
10-194448†	48†	3.2500	.447	2.469	1.157	2.875	3.500	.209

*To complete 10- part number or to complete MS part number, see how to order, pg. 22.
†Shell size 48 available in proprietary versions only. Consult Sidney, NY for availability and ordering information.

MIL-C-22992, QWLD MS17344 or 10-1946XX straight plug



All dimensions for reference only.

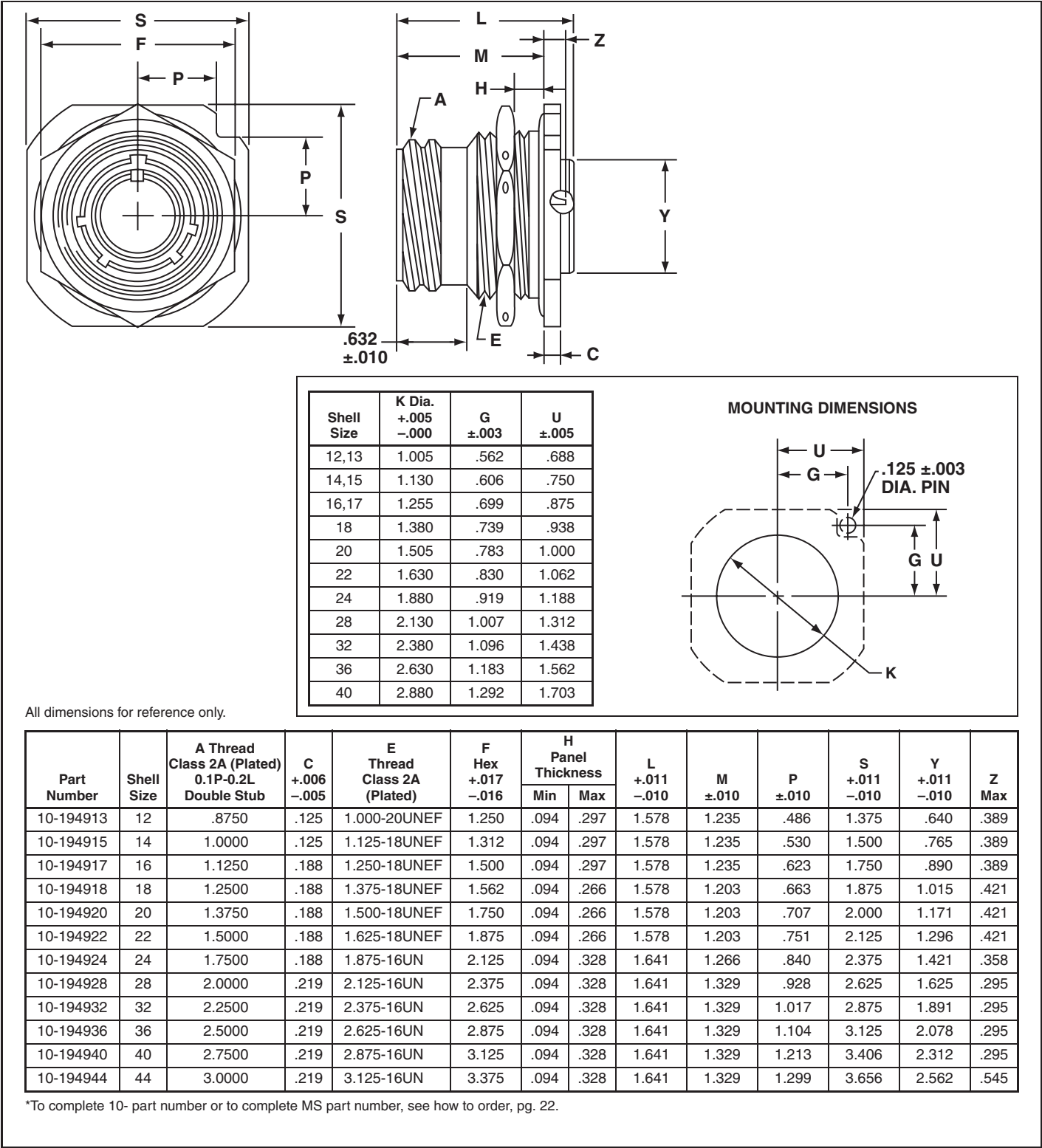
Part Number*	Shell Size	A Thread Class 2B 0.1P-0.2L Double Stub	B	D +.010 - .001	G	N +.011 - .010	Q Dia Max	V Thread Class 2A-LH (Plated)	Z Max
10-194613	12	.8750	.519±.020	.985	.030±.030	.738	1.156	.750-20UNEF	.807
10-194615	14	1.0000	.519±.020	1.109	.013±.030	.738	1.281	.875-20UNEF	.807
10-194617	16	1.1250	.519±.020	1.235	.091±.030	.738	1.469	1.000-20UNEF	.807
10-194618	18	1.2500	.519±.020	1.359	.216±.030	.738	1.563	1.125-18UNEF	.807
10-194620	20	1.3750	.519±.020	1.485	.216±.030	.738	1.688	1.250-18UNEF	.807
10-194622	22	1.5000	.519±.020	1.609	.216±.030	.738	1.844	1.375-18UNEF	.807
10-194624	24	1.7500	.519±.020	1.859	.184±.030	.800	2.094	1.625-18UNEF	.807
10-194628	28	2.0000	.519±.020	2.109	.184±.030	.800	2.344	1.875-16UN	.807
10-194632	32	2.2500	.525±.026	2.359	.190±.033	.875	2.594	2.0625-16UNS	.807
10-194636	36	2.5000	.525±.026	2.609	.234±.033	.875	2.844	2.3125-16UNS	.807
10-194640	40	2.7500	.710±.023	2.922	.049±.030	1.041	3.156	2.625-16UN	.807
10-194644	44	3.0000	.710±.023	3.172	.049±.030	1.041	3.406	2.875-16UN	.957

*To complete 10- part number or to complete MS part number, see how to order, pg. 22.

MIL-C-22992, QWLD

MS17348 or 10-1949XX

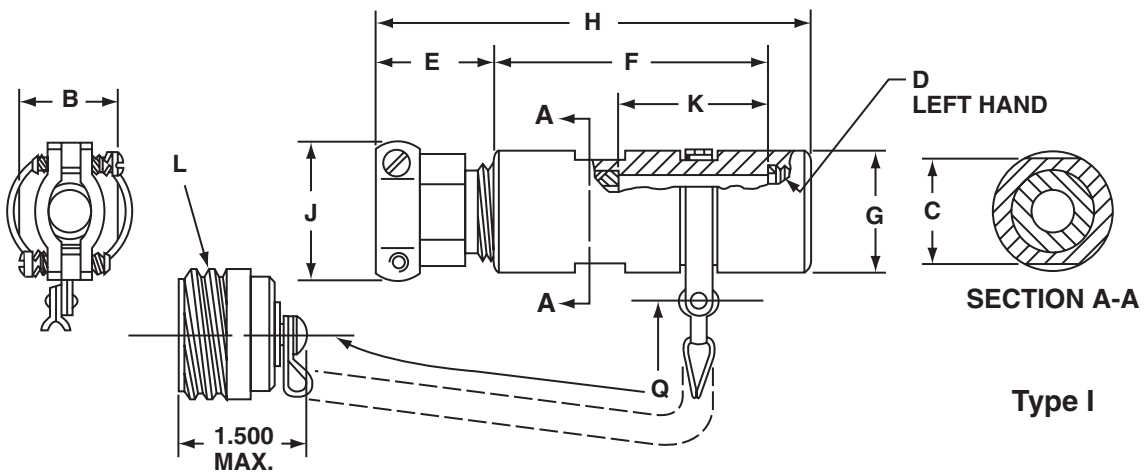
jam nut receptacle (box mount)



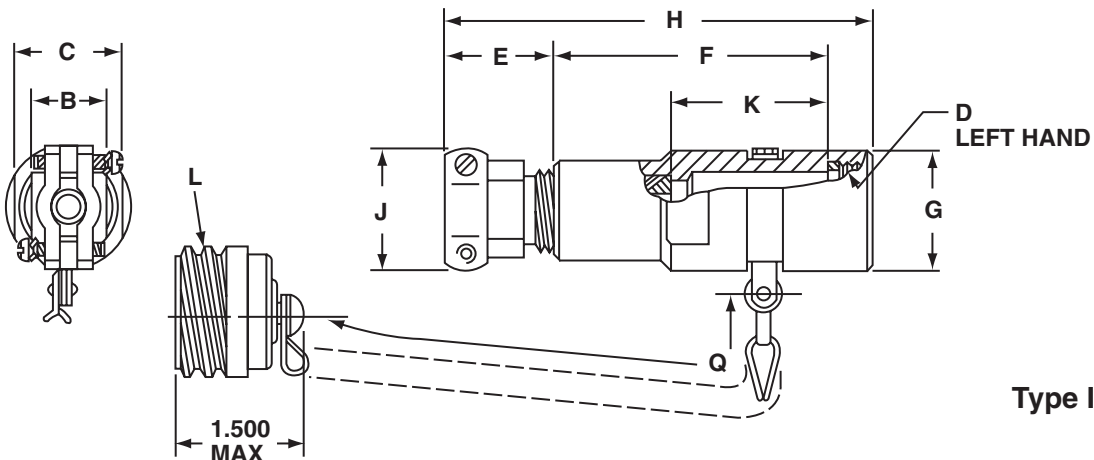
MIL-C-22992, QWLD Accessories

M85049 or 10-522958

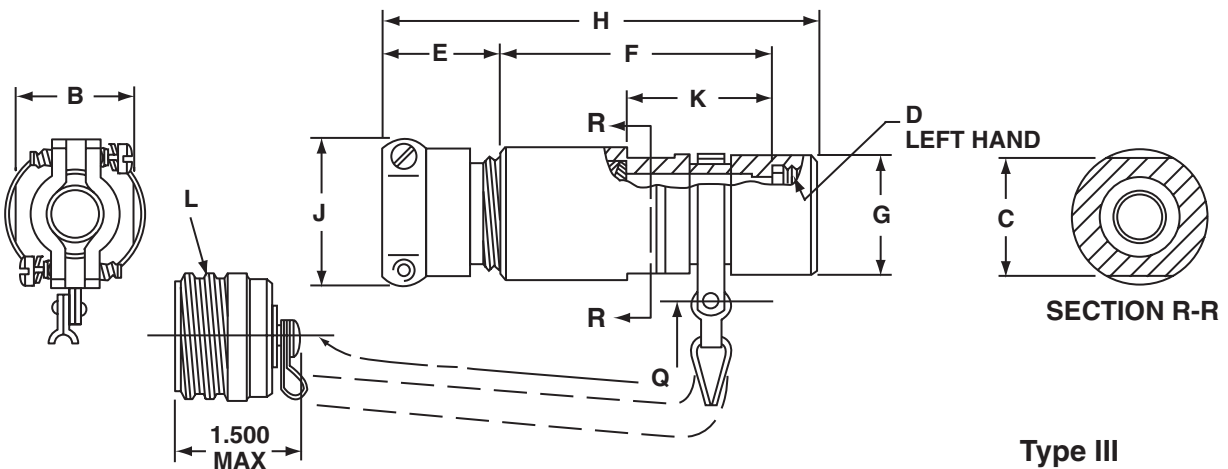
cable sealing adapters (plug)



Type I



Type II



Type III